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APRIL—the first of the greatest months of what is to be the greatest year boating has ever known. The winter covers are off, your real friends are reporting to give you a hand at fitting out—it's only a matter of days now before she will go over.

**WE HOPE everyone will read the article on pages 41 to 43 which treats the question of prices from a very human point of view. Some of the foremost authorities in the marine field have given their views which cannot fail to interest you. You may have a different view of the marine industry after reading this article.**

A CHALLENGE has already been received by the Motor Boat Club of America from England for a race this summer for the British International Trophy which was brought back to this country last Summer by Gar Wood. The race will probably be held at Detroit, September 3rd, 5th and 6th. The next races for the Fisher Trophy will be held at Buffalo, August 11th, 12th and 13th. The Thousand Islands Yacht Club will hold their annual regatta on the St. Lawrence on August 17th, 18th and 19th. On August 27th, 29th and 30th at Detroit, races will be held for the Gold Cup, the One Mile Trophy and the first races for the new Wood-Fisher Trophy for displacement boats. On the several days following racing will be on at Toronto. Such a schedule was never before attempted. It promises to go through as planned. The speed enthusiasts are going to have an active season as can be well seen.

**WLLIAM J. DEED hasn't slacked down a bit on the class of boats he is designing for us and for you. The 25-footer of the dory type, published this month on pages 34 to 37, is a dandy. It must surely meet the requirements of even the most critical motor boatman. As far as we know, a complete design of such a type has never been published before. MoToR BoatinG is sort of setting the styles in boats, one reader has suggested.**

THINK OF it! Nearly one thousand motor boatmen enrolled in our Correspondence Course. It is going to be no child's play to get a MoToR BoatinG Pilot's Certificate, as a reward. It means a whole lot of work and conscientious studying. But those who have enrolled know this. The answers to the questions of Lesson No. 1 which have been received up to the time of going to press are surprisingly good. They show that the students have mastered the subject fully as well as we had hoped. One thousand motor boatmen are going to know more about the pleasures of boating than they ever knew before. If a thousand are interested enough to enroll, we hesitate to even estimate how many others are following the Course also. Would it be exaggerating to believe that fully 25,000 boatmen will be the gainers?

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MoToR BoatinG, April 1921

VOL. XXVII No. 4

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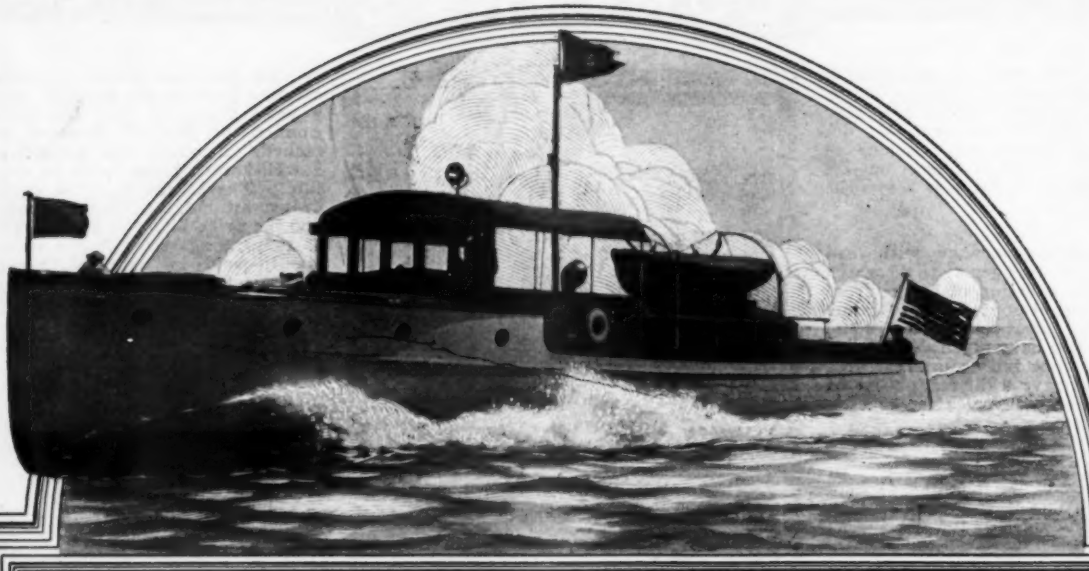
**A FEW days ago in our mail came a letter from South America with a page from the last December number of MoToR BoatinG attached, on which was advertised a well-known botor built in Buffalo. There was a little circle drawn around the model number and the price figure of $4,000. The accompanying letter to the editor simply said in Spanish "Please order it for me." We did. And in passing we could not refrain from remarking that "It Pays to Advertise."**

GAR WOOD wires us from Florida "I'm delighted over the English Challenge, will build Miss America II, greatest season ever". Edsel Ford wires us from Detroit "Am building special engine for Wood-Fisher race"—Sheldon Clark from Chicago wires us "Chicago in August will have greatest motor boat races ever held". Many other similar telegrams reached us during the month which is only one way of saying that we are to have a great season. And many people worth while are getting into this great sport.

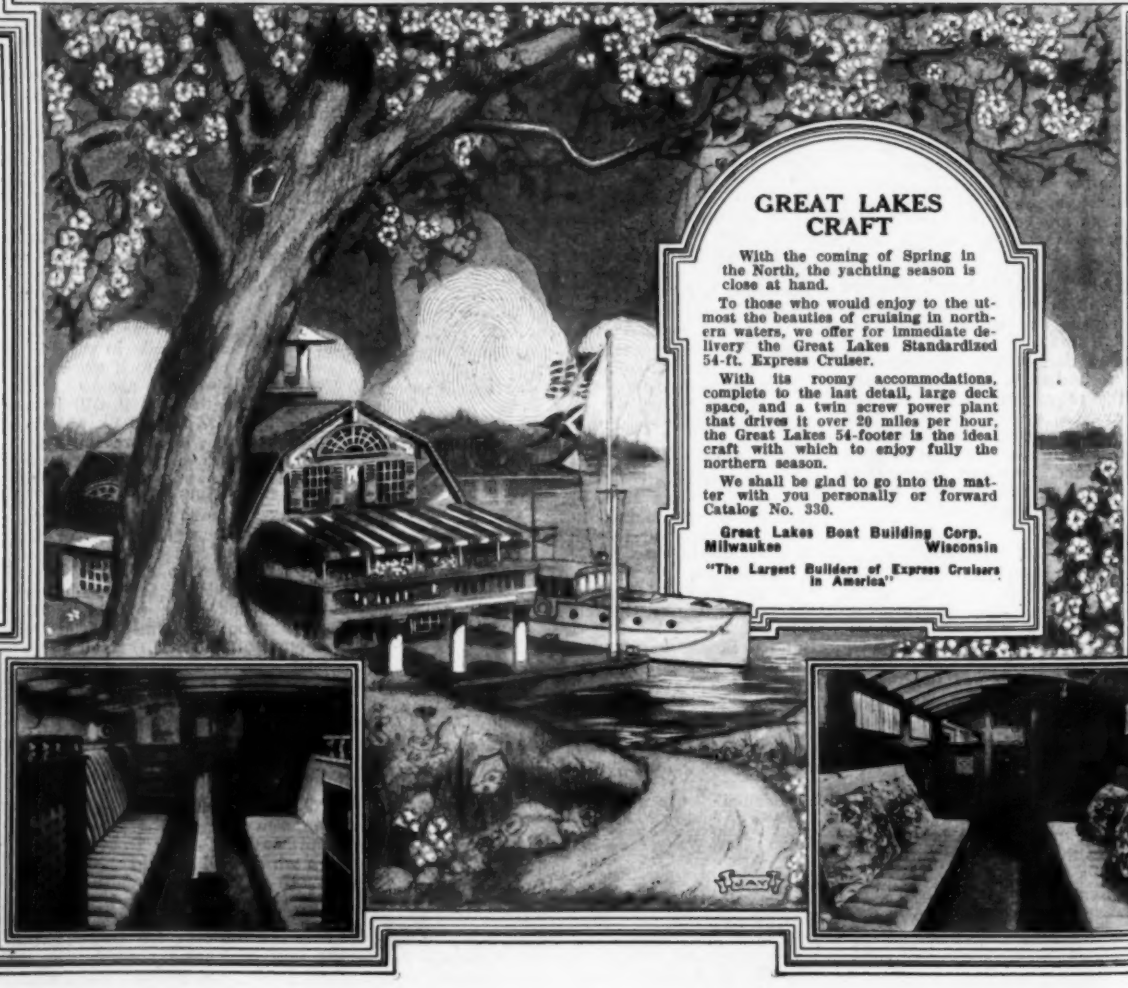
**THE MARINE motor manufacturers are meeting no slack period as is the case in many other industries just now. Most of them tell us that they have many more orders than a year ago. Many are employing the greatest number in the history of their plants. But there's a reason—prices are right and there was no wild cat growth a few years ago, consequently no fiddler to pay now.**

THE particulars of the Deed of Gift governing competition for the Wood-Fisher Trophy have finally been decided upon. The requirements for this race will be similar in every way to the requirements for the original Fisher Trophy with the exception that any form of power plant will be allowed to enter while in the Fisher Trophy Race only stock marine motors are allowed to compete. The minimum length of hull will be the same, namely 32 feet on the waterline. Three fifty-mile heats without repairs between heats will constitute the race. Maximum allowable piston displacement will be 3400 cubic inches. This will permit boats powered with two Liberties or three Sterlings or four Hall-Scotts to compete. Foreign built will be allowed to enter. The hull definition decided upon is as follows: The keel and chine (or bilge) must be continuous and must extend from the bow to the stern (or stern post). Steps, either transverse or longitudinal, will not be permitted. Surfaces on each side of the keel line between the keel and the chine (or bilge) must be continuous and not contain breaks, jogs or notches of any description. Note: Sea Sled model acceptable.

**WORD COMES from Peoria that the annual regatta of the Mississippi Valley Power Boat Association which will be held there on the Fourth of July will have the largest entry list of small class boats in its history. Quite a number of new boats are building for this regatta, the city of Peoria contributing at least three new craft.**



# GREAT LAKES CRUISERS



## GREAT LAKES CRAFT

With the coming of Spring in the North, the yachting season is close at hand.

To those who would enjoy to the utmost the beauties of cruising in northern waters, we offer for immediate delivery the Great Lakes Standardized 54-ft. Express Cruiser.

With its roomy accommodations, complete to the last detail, large deck space, and a twin screw power plant that drives it over 20 miles per hour, the Great Lakes 54-footer is the ideal craft with which to enjoy fully the northern season.

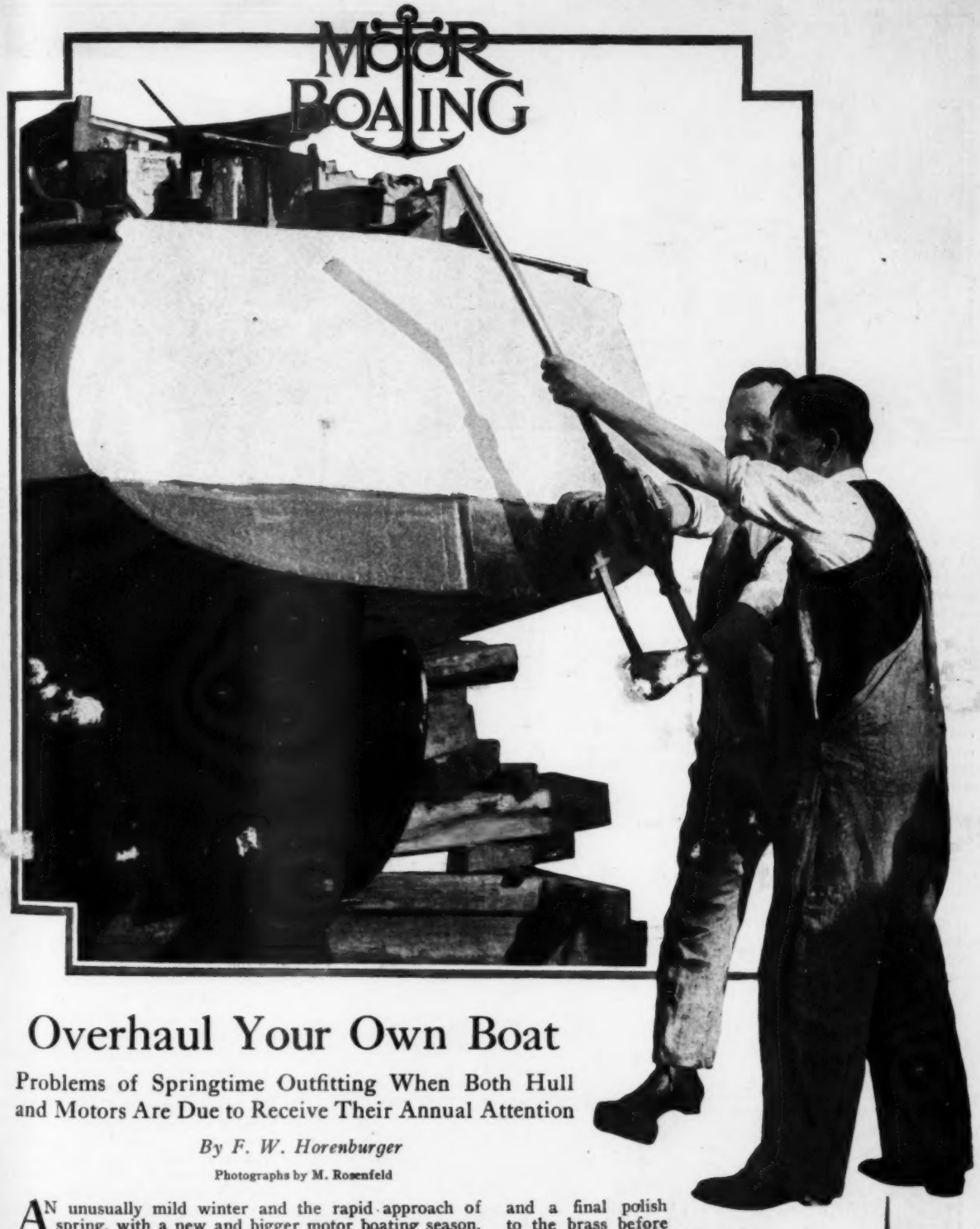
We shall be glad to go into the matter with you personally or forward Catalog No. 330.

**Great Lakes Boat Building Corp.**
**Milwaukee Wisconsin**

**"The Largest Builders of Express Cruisers in America"**

*Advertising Index will be found on page 142*

MOTOR BOATING



# Overhaul Your Own Boat

## Problems of Springtime Outfitting When Both Hull and Motors Are Due to Receive Their Annual Attention

*By F. W. Horenburger*

Photographs by M. Rosenfeld

AN unusually mild winter and the rapid approach of spring, with a new and bigger motor boating season, warns the enthusiasts to get busy. The most industrious of the clan are the ones who will get overboard at the earliest possible moment. All overhauling and refinishing is planned and undertaken in time so that the boat, with its manifold pleasures, can be enjoyed for the greatest possible length of time. It is surprising how quickly the summer approaches. One has hardly begun to do his spring overhauling before the good old sun gets busy and starts to apply the season's coat of tan to bare arms and faces. The forehanded motor boatist is he who, when the first of April arrives, has only to add a few final licks of varnish and a final polish to the brass before sliding down the track into the water for a new season.

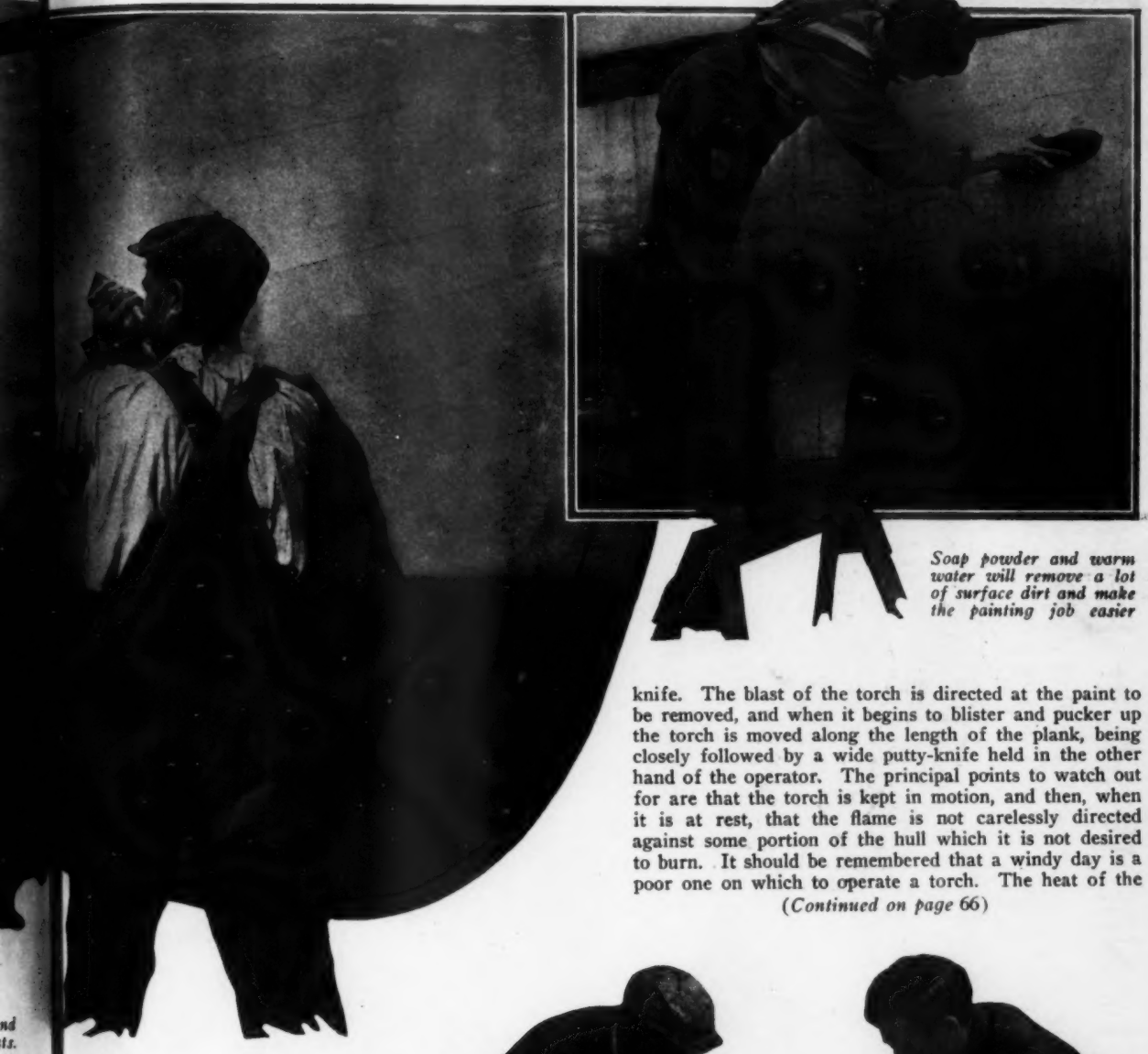
It is the man who plans his work in advance and arranges his varied tasks in some sort of chronological order who is able to complete them all on schedule time. Many of the preliminary tasks about the boat should be undertaken in the fall after the boat is hauled out and before it is covered over for the winter.

*Some boatmen take their motor down completely every year. This is seldom necessary*

*All painted work must be well sanded and smoothed down between successive coats. Several light coats are more effective than a heavy one*

For example, no matter how carefully the bottom of the boat is painted and cared for there is bound to be some trace of barnacles or other marine growth. These can be very easily removed when the boat is pulled out of the water before they get an opportunity to dry up. A scrubbing with a stiff brush and the help of a little soap powder will clean up both the topsides and bottom. A washing down with a hose will leave the boat clean and in fine condition for future operations. It is an excellent scheme to give the boat one of the two coats of copper bottom paint in the fall also. The exposure to the weather during the winter and the warmth of early spring tend to open the seams, which can be prevented to a large extent by the painting in the fall. While it is a little out of the regular order of events it is worth mentioning here, while we are on the subject of bottom paints, that the final coat of paint should be applied to the boat's bottom at the very last moment. One of the principal reasons why marine growths seem to thrive better on some boats than on others, in spite of the fact that the same brand of paint was used on both, is the fact that the paint on one was thoroughly dry when the boat was launched, while the other was launched with the paint wet. In order to secure the maximum possible protection against marine growths the best advice which can be given is to stop the boat on the launching ways just before entering the water, put several men on the painting job and launch the boat in the quickest possible manner with the paint as wet as can be. The effect of this is to prevent the evaporation of some of the lighter oils and poisonous compounds on which the paints rely for their protective ability. Now let us go back to our other tasks and finish them first. As is natural, the refinishing of the paint and bright work are the tasks which will absorb the most time.

*Scraping decks is a well-known pastime. Varnish remover and sharp scrapers lighten the work*



*Soap powder and warm water will remove a lot of surface dirt and make the painting job easier*

knife. The blast of the torch is directed at the paint to be removed, and when it begins to blister and pucker up the torch is moved along the length of the plank, being closely followed by a wide putty-knife held in the other hand of the operator. The principal points to watch out for are that the torch is kept in motion, and then, when it is at rest, that the flame is not carelessly directed against some portion of the hull which it is not desired to burn. It should be remembered that a windy day is a poor one on which to operate a torch. The heat of the

(*Continued on page* 66)

To begin at the beginning, the first operation on starting the season's work is the removal of the winter's protection and the thorough drying and airing of the boat both inside and out. If the weather is inclined to get hot very rapidly it is well to splash a little clean water about the bilge and on the decks occasionally to prevent excessive drying out. In this way when the boat is launched the seams will not be open and she will not take in so much water.

Before beginning to paint, all dirt, dust and grime should be well washed off the hull. Most hulls will occasionally require scraping and cleaning down to the bare wood. After a large number of paint layers have been applied, it is advisable to burn it off. This is done by means of a blow torch and a putty-

*Get the motor out of the boat where you can get at it*

# All Is Not Work at Regattas

## Scenes at the Recent American Power-Boat Association Regatta Which Show the Interest Being Taken in Motor Boat Racing

*Frank D. Gheen, formerly of New York City but now of Daytona Beach, Fla. Commodore Gheen's Kitcinque was the first express cruiser in America*

*Commodore A. J. McLeod of Algonac, Mich., and Miami, Fla. The Commodore is known the world over as the Dean of Fresh Water Yachtsmen. About one more winter at Miami and the prefix fresh water can be omitted*

*Charles A. Criqui, president of the Sterling Engine Co., Buffalo, N. Y. Commodore Criqui is an enthusiastic motor boatman also*

*H. R. Duckwell of Indianapolis and Miami. Mr. Duckwall's family of Hoosiers is known the world over*

*Philip Wood, brother of the famous Gar, and George Leary of Orlo II fame*

*Famous celebrities at the Miami motor boat races: Mrs. Walter Moreton, Boston; Mrs. J. Byron Creamer, Islip, L. I.; Mrs. John J. Hansen, Jersey City, N. J.; Mrs. Charles Scheffler, New York; William Bruns, New York*



*Commodore Charles W. Kotcher*

Gar, and George Leary of Orlo II fame

Commodore Charles W. Kotcher and his gun used for starting race

Below: William Bruns of New York; Gordon Hammersly, owner of Cigarette, and W. C. Morehead of Milwaukee

One of the many yachting parties at Miami, Fla., for the speed boat races. Left to right: Harry Stutz of Indianapolis, Mrs. C. A. Buckwalter of Indianapolis, Mrs. W. E. McCollum of Chicago, Ex-Mayor C. A. Buckwalter of Indianapolis, Mrs. R. E. Maypole of Chicago and Mrs. Harry Stutz of Indianapolis. In rear: Miss Marion McCurran of Chicago and Miss Bella Stutz of Indianapolis. Photographed abroad Mrs. Harry Stutz's yacht Bella

Chairman of Sub-Committees: Messers Sawyer, Newby, McLeod, Kotcher, White, Schantz, Wood, Parsons, Chapman

Arthur Utz, sales manager of the Hall-Scott Motor Car Co., receiving the congratulations of W. E. Gibb of the Frisbie Motor Co. because a Hall-Scott motor won the Fisher Trophy

Probably the first photograph ever published of Albert Hickman. It can be readily seen that Mr. Hickman's Sea Sled was successful

# Kalora Travels Overland

## Adventures of a Runabout on Its Maiden Voyage From Detroit to Lake Chautauqua via River, Lake, and Motor Truck

DRIVE away deliveries have been very popular with the motor car industry in Detroit this year owing to the very acute shortage of freight cars, but in the motor boating industry drive aways have always been the regular thing, for who wants to ship a boat by rail if it is humanly possible to run it under its own power.

Thus it was that Kalora, a beautiful 29-footer built for J. W. Packard, who summers at Lakewood, N. Y., on Lake Chautauqua, made a memorable trip from the shops of the Hacker Boat Company, her builders, to her new home, via river, lake and truck.

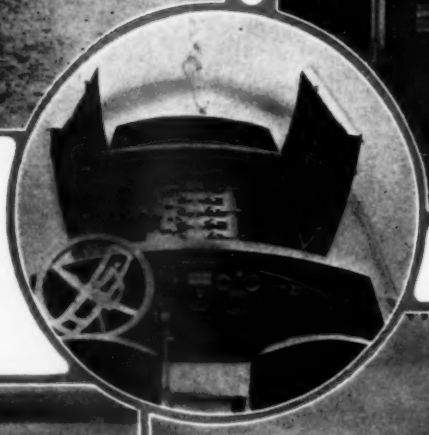
Kalora is a standardized 29-foot 6-inch Hacker runabout, having a beam of 6 feet 3 inches. The general layout of the boat shows a three passenger cockpit forward of the engine, which is installed about amidships under hatches. The steering wheel and controls, however, are installed on the bulkhead aft of the engine, the operator being provided with a comfortable bucket type seat with all controls close to his hand. The power plant is a six-cylinder 200 h. p. Hall-Scott marine engine, which turns a three-bladed 18-inch diameter, 32-inch pitch Hyde propeller at 1,700 r.p.m., driving the boat at thirty-eight miles an hour. This engine has proven so satisfactory that Mr. Packard states that the makers would be quite justified in calling it a heavy duty engine, as it stands up so perfectly without ever a sign of distress or a request for babying.

After Kalora had been put through her paces at Detroit, to the complete satisfaction of Mr. Packard, he decided to have her run under her own power as far as Barcelona, N. Y., and then ship her by motor truck to Lake Chautauqua. Accordingly, early the next morning, before breakfast in fact, and at 6:06 to be exact, Kalora, in command of Ensign Warren Packard, nephew of the owner, and with a crew consisting of Vern Squier as mechanic and a representative of the Hacker Boat Company, left on the first leg of the trip.

Taking it easy, and with the engine running steadily at 1,300 r.p.m., Kalora wound her way down the Detroit River, and in less than an hour had passed the lightship at the end of the steamship channel and was headed S.S.E.¾E. for Sandusky. The sea was rather chopper, but not enough to bother Kalora, and before very long Green Island Light was passed and the course changed more to the East to go through South Passage, between Kelley's Island and the mainland.

*Kalora's wake astern is clean and free from unnecessary fuss*

*Kalora's home on Lake Chautauqua, the best way to protect a fine boat*



*The compactly installed 6-cylinder Hall-Scott motor furnishes the necessary pep*

*When called upon, Kalora can be driven up to 38 m.p.h.*

*When it comes to moving overland, the motor truck must be called upon*

Photographs by M. Rosenfeld

# Complete Success of Standardization

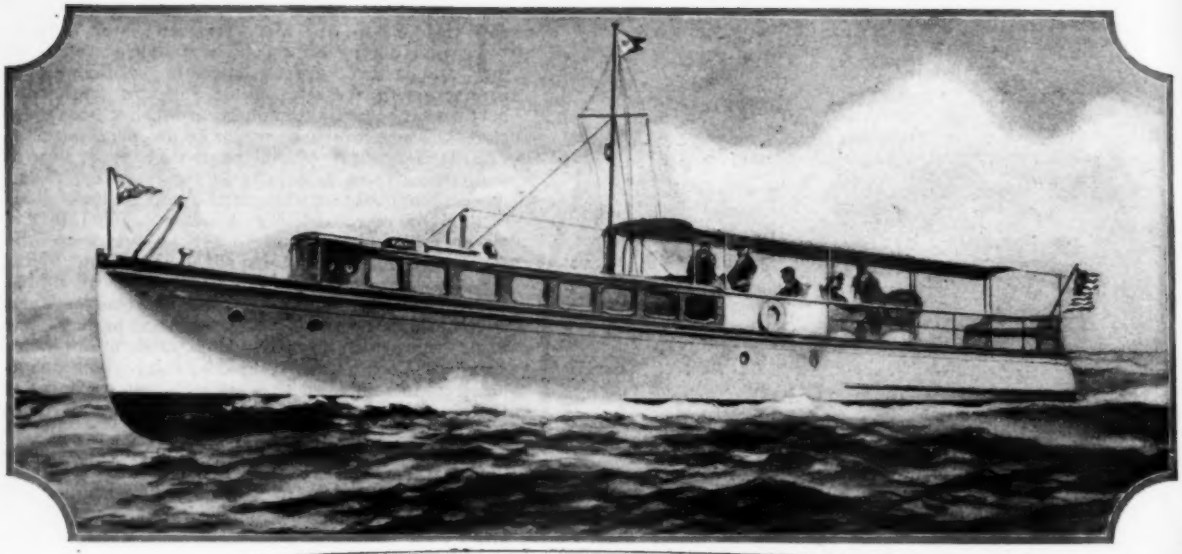
## Purchasing a Boat Is Simplified By the Modern Methods Employed at the Elco Works In Bayonne

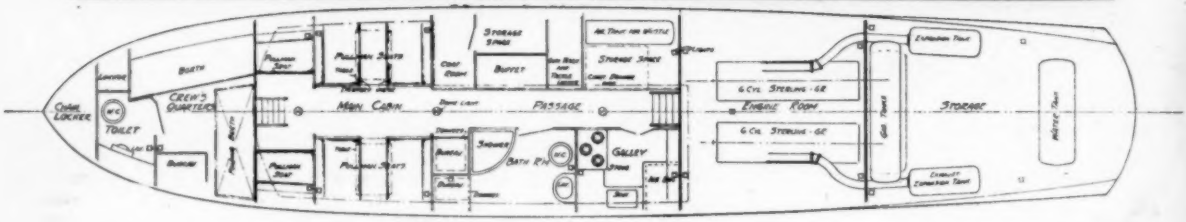
THE day of the made-to-order motor boats is approaching an end. The complete success of standardization as practiced at the Elco Works in Bayonne makes it possible for any prospective boat owner to examine and try a finished boat identical with one which he might contemplate purchasing. It is customary in the purchase of most articles to examine them in a sales or showroom so that a correct impression of the article can be had. This method of merchandising is being applied in the motor boat industry and the Elco Works are the leaders in this modern way of selling boats. Previously when a prospective purchaser desired a boat it was necessary to go to considerable inconvenience, study over many plans and examine some half-done boats from which he could gather no definite idea of shape or finish in the completed stage. His imagination was compelled to work overtime to visualize the possible appearance of the boat. These days are now relics of the past. A visit to the Elco Works will demonstrate to the observer the value of complete standardization. His first impression will be favorable by reason of the cordial greetings extended by a competent representative. The showroom floor is stocked with many completely finished cruisettes with all equipment, upholstery, electric lights, etc., in place and in working order. The illumination is excellent so that every detail can be inspected and examined. A demonstration on an identical cruisette on the waters of Newark Bay and an opportunity to operate and run the boat will soon convince him of their easy handling ability. Should he desire to take a cruisette home with him it is a simple matter to launch his boat and sail it proudly away. A delivery date for any future time can be as readily arranged with the positive assurance that the complete boat will be ready at the promised time. Many boats are always under construction and upwards of forty J. V. B. motors are awaiting their turn to furnish power for the rapid succession of cruisettes on their way to the water.

It is most impressive to see the way cruisettes are being put through in a modern, up-to-date and businesslike manner. Every boat after it is completed is put overboard and thoroughly tested.

*Ample shop facilities and complete standardization permit cruisettes to be turned out in large quantities*

*Upwards of forty J.V.B. motors are always on hand in the assembly room of the Elco Company to take their place in the cruisettes as they are completed*






# Pam, a 62-Foot Day Cruiser

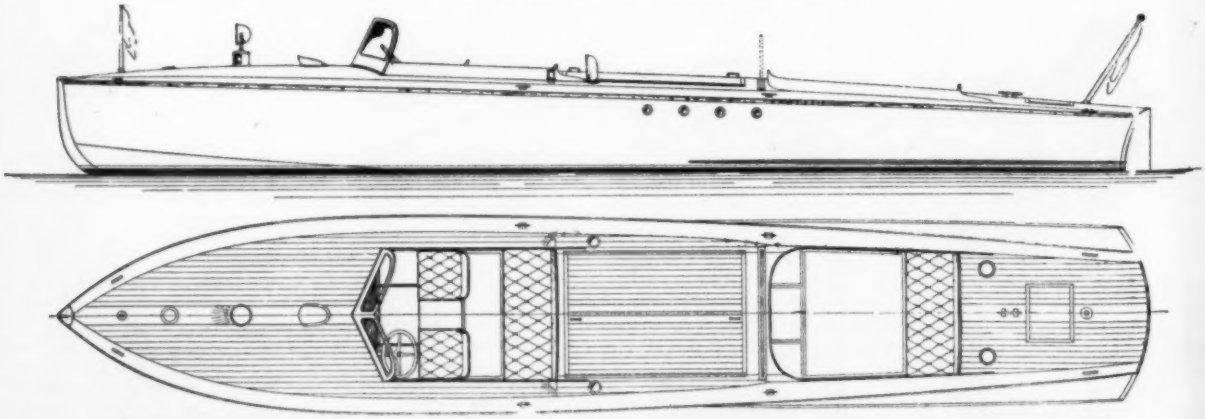
## An Unusual Design of a Fast Day Cruiser, Embodies Many Novelties In Arrangement and Power Plant

THERE is under construction at the Great Lakes Boat Building Corporation plant, Milwaukee, Wis., an unusual type of boat. Designed particularly for day cruising and equipped with sufficient cruising accommodations to provide comfort for an ample party on extended trips. Her owner, Harrington F. Walker, had some ideas of his own which it was necessary to incorporate in the design. The first requirements were for a seaworthy boat with ample light and ventilation to all spaces below decks. Another was the ample deck space required for the outdoor accommodation of the owner and guests.

The tender which accompanies this boat is carried on the starboard side amidships in a depressed part of the cabin top in such a way as not to interfere with the vision. Commodious accommodations are provided, four double Pullman berths are installed in the main cabin and a larger shower bath, ample locker space and an unusually large galley occupy the remainder of the cabin.

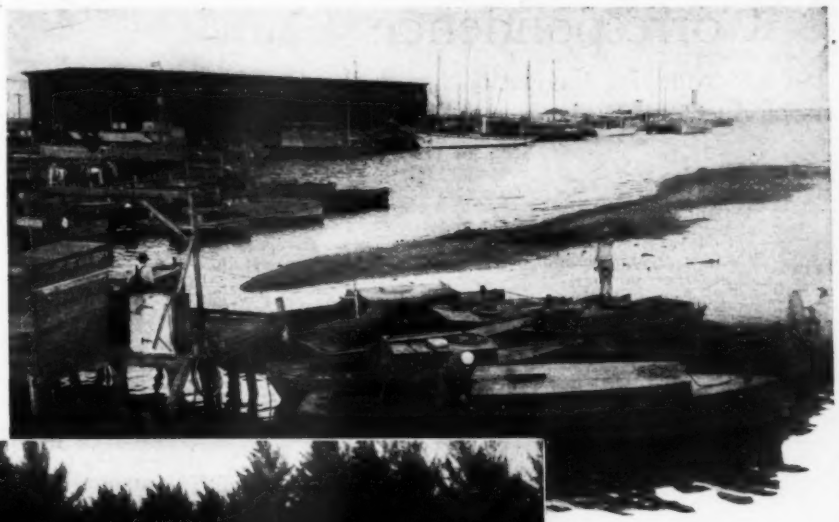
Power is furnished by a pair of six-cylinder model G.R. Sterling motors, controlled from the deck. A ¾ K.W. lighting set with auxiliary electric pump for fresh water and bilge purposes are also fitted.

# De Luxe Runabout



*An unusual design for a high speed runabout 35 feet long to accommodate five passengers forward and five aft. The designer John L. Hacker of Detroit, has specified Hall-Scott marine motors to develop the required speed*

# Frisbies Win Southern Fish Boat Championship

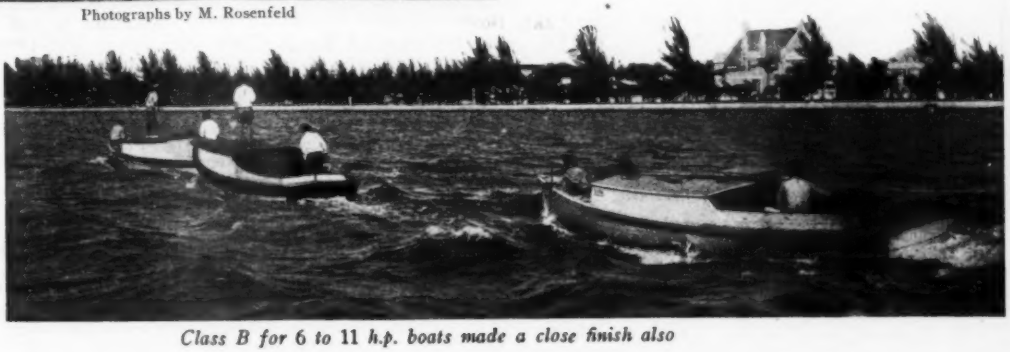


*Fishing craft tied up at their piers prior to starting for the race course*

Photographs by M. Rosenfeld

Those who fish for a living are a type of human being seldom seen elsewhere except in Florida. Many are original crackers, some are natives of the nearby islands of Bahama. But all are boatmen, born and brought up on the sea, fearless, daring, great of strength and probably able to stem the greatest of southern storms without flinching. But strange to say, their seamanship when in a pinch or when several of their boats are endeavoring to make a landing at the same time or in a seaway is about the poorest exhibition of boat handling ever seen. One of the crew was generally forward, lying on his stomach on the forward deck or cabin house with his arms extending far forward beyond the bow to "fend off" when his boat got too close to his neighbors in the jam which invariably results when four or five of the boats come into the immediate vicinity. There is no such thing as careful maneuvering. Brute strength and speed win. The law that two bodies cannot occupy the same space at the same time probably never occurs to them.

*The finish of Class A*



*Class B for 6 to 11 h.p. boats made a close finish also*

DOWN at Miami during the races for the Fisher Trophy, there were also races for another class of boats which showed even closer competition and keener enthusiasm among the contestants than the event for the 40 milers. This was the race for fish boats. There were no rules, no chance to haul out in order to clean bottoms or take down the power plants. It was just a free for all—the first boat home to win. So evenly were the boats matched that it was generally the boat that made the first start that reached the finish line first also.

Down Miami way the number of persons who earn their bread and butter by fishing is quite considerable. With the Gulf Stream only two miles off shore, the chances of getting big catches almost daily are nearly 100 per cent. Practically every known specie of tropical fish is there in abundance. Besides, the weather is so invariably good, especially during the winter months, that to be held in port one day out of thirty on account of rain or storm is the exception rather than the rule. Consequently, fishing both as a means of livelihood and as a sport is immensely popular.

The boats of these fishermen are a type also. Of course, they were not designed—just built. There is an amazing sameness to them considering the fact that they were nearly all built by their owners. The underbody is a sort of a cross between a V and a round bilge type. In length they run about 25 feet, some a foot or two shorter, others a few inches longer, just as the length of the lumber happened to be, out of which they were built.

The strangest part of all is their power plants—there seemed to be just two makes, Frisbies and Palmers. The smaller or slower boats had 5 h.p. 4-cycle Palmers, a few 7 or 8 h.p. Palmers and the faster or larger of the boats were equipped with Frisbies of about 12 h.p.

The crew consists of one or two persons. Steering is

(*Continued on page* 86)

# More Motor Boatmen Enroll in Correspondence Course

## Nearly One Thousand Now Studying Navigation, Small Boat Handling, Piloting and Seamanship
## Many Perfect Sets of Answers Received—All Show a Thorough Knowledge of the Subject

See pages 19-25

HERE are the questions for Lesson No. 2 in the Correspondence Course in Small Boat Handling, Seamanship and Piloting which was published in March MoToR BoatinG. The lesson covered lights to be carried by all types of boats therefore in answering the questions, no attention should be given to Government navigation lights such as lighthouses, buoys, etc. The questions are not difficult although they will require some thought in answering. Each one is intended to illustrate one or more points in connection with lights with which every motor boatman should be familiar. You should be able to answer all the questions if you have studied Lesson No. 2 faithfully. If you can and do answer the questions, you are a good boatman and know much more about the subject than many sea-faring men who hold officers' papers.

*MoToR BoatinG's Correspondence Course is proving the greatest feature ever attempted by a boating publication. Nearly one thousand are now enrolled and new enrollments are coming in daily. Practically every state in the Union is represented, besides several enrollments from England, France and other European countries.*

*Fifteen of the foremost motor boatmen in the country have promised to act as examiners. These are Dr. A. B. Bennett, Washington, D. C.; T. I. Coe, New York, N. Y.; Sigmund Cohn, New York, N. Y.; A. R. Dessow, New York, N. Y.; A. B. Duryee, New Rochelle, N. Y.; Thos. Farmer, Jr., New York, N. Y.; Walter Grosszman, Bayside, N. Y.; F. P. Huckins, Boston, Mass.; H. A. Jackson, New York, N. Y.; F. T. Lander, New York, N. Y.; John K. Murphy, New Haven, Conn.; Dean Potter, New York, N. Y.; M. N. Price, Baltimore, Md.; G. W. Schaeffer, Chicago, Ill., and H. M. Williams, New York, N. Y.*

*Letters still continue to reach us approving of the Course and telling us what a benefit it is to be to boating generally. A number of clubs and several other organizations have adopted resolutions recommending that their members enroll. Quite a number of clubs will hold a monthly meeting devoted to the study of lessons as they appear in MoToR BoatinG.*

*It is not too late to enroll now. All you have to do is to send your name to the editor of MoToR BoatinG, 119 West 40th Street, New York.*

Just a word about the answers. Make them as brief as you possibly can. Use your own language. If you do not understand the questions or cannot answer them do not be afraid to say so. If you want any explanation write to the editor of MoToR BoatinG. The sole object of MoToR BoatinG's Correspondence Course is to help motor boatmen. We stand ready to do this by any means within our power.

There is no time limit when the answers must reach us but we suggest that you send them as early as possible. We are going to turn over all questions we have received on the last day of each month to the Examiners. The names of those whose answers are received prior to the last day of the month and who have successfully passed at least 80 per cent of the questions will be published in the following issue of MoToR BoatinG. For example, the answers to (*Continued on page* 126)

### Questions for Correspondence Course—Lesson No. 2

(*Published in March MoToR BoatinG*)

Lights for All Types of Vessels

Answers should be sent to the Editor of MoToR BoatinG, 119 West 40th Street, New York

1. Through or around how many points may the following lights on vessels show?
   (a) White light.
   (b) Red light.
   (c) Green light.
2. Should the red and green side lights be visible across the bow? Are they?
3. If at sea you saw one white light (and no other light) what might it be.
4. If you saw two white lights vertically arranged (and no other light) what might it be?
5. If you should see two red lights vertically arranged (and no other lights) what might it be?
6. If you should see two red lights vertically arranged in addition to one or more white lights near by, what might it be?
7. If you saw two white lights horizontally arranged (and no other lights) what might it be?
8. If at sea you saw two white lights (vertical, horizontal or otherwise) and one red and one green light, what might it be?
9. If at sea you saw one red and one green light (without white lights) what might it be?
10. If you should see a red over a white light with red and green side lights, what might it be?
11. If you should see a white light over a red light but with no red or green lights, what might it be?
12. What lights are carried by motor vessels?
    (a) Class 1.
    (b) Class 2.
    (c) Class 3.
13. What are the sizes of the light lenses which are required on
    (a) Class 1 motor boats?
    (b) Class 2 motor boats?
    (c) Class 3 motor boats?
14. If you are overtaking an ocean-going vessel what light or lights, if any, do you see?
15. What precaution must a vessel take which is not required to show a light visible from astern?
16. How do the lights on ocean and inland steamers differ?
17. How do the lights carried on harbor and ocean-going tow-boats differ?
18. When are the side lights carried on
    (a) Motor boats.
    (b) Pilot vessels.
    (c) Ferry boats.
    (d) Disabled boats.
    (e) Ocean steamers.
    (f) Fishing vessels.
    (g) Cable vessels.
19. How should the aft range light (32 point) on a motor boat always be placed relative to the bow light?
20. Should a tug boat when towing carry a 20-point bow light?
21. What lights do the following vessels being towed carry?
    (a) Ocean barges towed tandem.
    (b) Barges and canal boats on Hudson River towed tandem.
    (c) Barges and canal boats towed in tiers.
    (d) Car floats.
22. When does a tug boat carry
    (a) One 32-point light?
    (b) Two 32-point lights?
    (c) Three 32-point lights?
23. When a red side light on a vessel is visible showing toward your red light, what do you know about the other boat's course and what action do you take?
24. When the red side light of a vessel underway is visible showing toward your green light, what do you know about the other boat's course and what action do you take?
25. When the green side light of a vessel underway is visible showing toward your green light, what do you know about the other boat's course and what action do you take?
26. When the green side light of a vessel underway is visible showing toward your red light, what do you know about the other boat's course and what action do you take?
27. When both red and green side lights are visible, what is your action?
28. When a side light is visible on your starboard bow and the upper (range) white light is to the right of the lower white light, what does it indicate to you and what is your action?
29. When a side light is visible on your port side and the upper white (range) light is to the right of the lower white light, what does it indicate and what is your action?
30. When a side light is visible on your port bow and the upper (range) white light is to the left of the lower white light, what does it indicate and what is your action?
31. When a side light is visible on your starboard bow and the upper (range) white light is to the left of the lower white light, what does it indicate and what is your action?
32. When both green and red lights are visible and the two white lights are becoming nearer and nearer vertical, what does it signify and what is your action?
33. When both green and red lights are visible and the two white lights are separating more and more from the vertical, what does it signify and what is your action?
34. What lights are carried by a row boat?
35. Between what hours are lights carried?

Fig. 49—*A motor boat in distress at night signifies this by a gun or other explosive signals fired at intervals of about a minute, rockets or shells of any color fired one at a time at short intervals or the continuous sounding of any fog-signalling apparatus. The life saver or Coast Guard on shore signals "You are seen—assistance will be given as soon as possible" by burning a red light or by firing a red rocket (see text for day signals). Two torches burning close together at night signify "This is the best place to land".*

Fig. 50—*Lens of Kilauea Point Light.*

# Navigation Course Lesson No. 3

Fig. 51—*Kerosene vapor light and lenses of a range light.*

Government and Navigation Lights and Their Characteristics, Lighthouses, Light Ships, Range Lights, Classification of Lights, Beacons and Spindles as Aids to Navigation, Distress Signals by Day and Night, U. S. Coast Guard Signals, Storm and Weather Signals, Fog Signals for Various Types of Boats, Day Marks for Vessels

See Also Pages 18, 26, 84, 94 and 122.

Fig. 52—*Lens and flashing mechanism of second order light.*

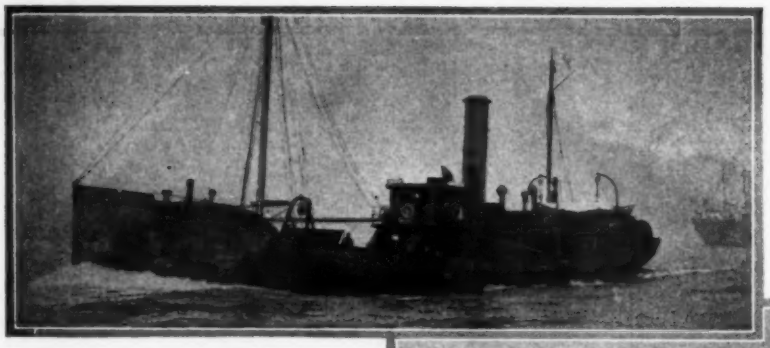


Fig. 53 (at the left)—*The fog signal for a steam or motor-vessel underway on the high seas is one prolonged blast on a whistle at intervals of not more than two minutes. On the inland waters, she shall sound a prolonged blast on a whistle at intervals of not more than one minute. On the Great Lakes, she sounds three blasts in rapid succession every minute except when towing a raft.*

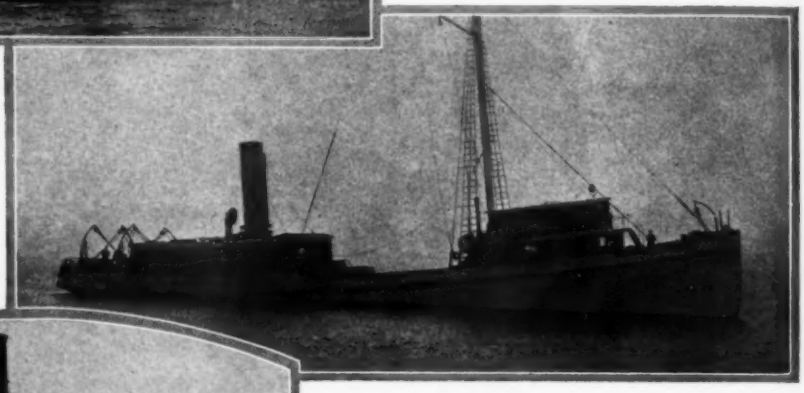


Fig. 54 (at the right)—*Fishing vessels such as drifters, trawlers and dredges and line fishing craft if over 20 tons, must when engaged in fishing, give a prolonged blast on a whistle or fog horn according to whether they are provided with power or sail, the blast to be immediately followed by the ringing of a bell.*

Fig. 55—*The International rules provide that on the high seas a motor or steam vessel underway but stopped and having no way upon her, shall sound at intervals of not more than two minutes two prolonged blasts with an interval of about one second between. This signal is used by vessels navigating in the fog when their headway has been stopped in order that the navigating officers can readily locate a fog signal of a lighthouse or lightship. It is also used when two vessels have been approaching each other in the fog giving the signals indicated in Fig. 53, but have come so close together that for safety's sake it is necessary to stop the headway of one or both vessels until their positions are more clearly determined by the other boat. The vessel whose headway has been stopped should give the two-blast signal. If the headway has not been stopped she should give the regular one-blast signal.*

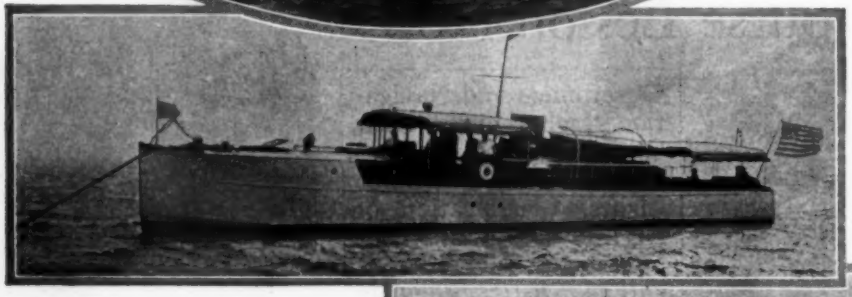


Fig. 57—*The International rules provide that a vessel employed in laying or picking up a telegraph cable or a vessel disabled which is unable to get out of the way of an approaching vessel or one unable to maneuver as required by the rules, shall at intervals of not more than two minutes sound three blasts in rapid succession, namely one prolonged blast followed by two short blasts.*

Fig. 56—*A boat at anchor or not underway (when in a fairway) should at intervals of not more than one minute ring a bell rapidly for about five seconds. All the rules prescribed for the sea in fog are to be followed both day and night, also in mist, falling snow or heavy wind storms. Speed in a fog should at all times be reasonable.*

Fig. 58—*Any vessel aground or in the case of a fishing vessel who gets her gear fast to a rock or other obstruction, shall be considered at anchor and give the signal necessary for such a case.*

Fig. 59—*A vessel on coastwise or inland (except Great Lakes) waters which is towing, shall sound on her whistle one long blast followed by two short blasts in rapid succession at intervals of one minute. On the high seas, the same signal is given at intervals of two minutes. The boats being towed may give the same signal on the fog horn. On the Great Lakes a vessel being towed sounds a fog signal on a bell every minute, thus—two strokes—interval—two strokes. The vessel towing, except one towing a raft, sounds three blasts on her whistle in rapid succession every minute. A vessel towing a raft on the Great Lakes sounds one blast every minute on a screeching whistle or siren.*

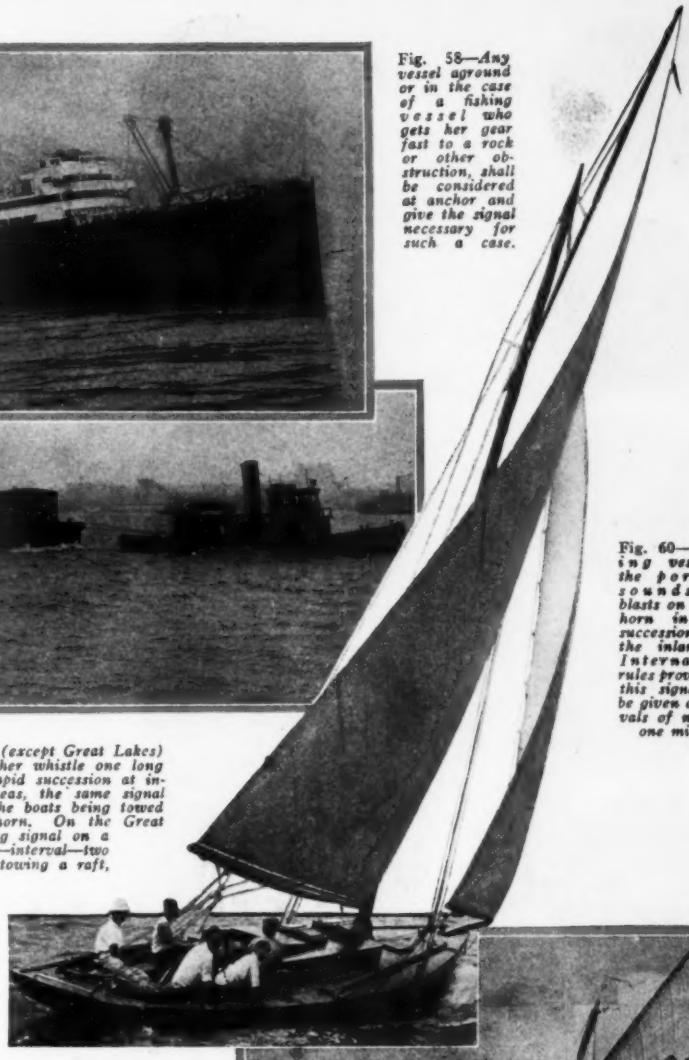


Fig. 60—*A sailing vessel on the port tack sounds two blasts on the fog horn in rapid succession. Both the inland and International rules provide that this signal shall be given at intervals of not over one minute.*

Fig. 61—*A sailing vessel on the starboard tack sounds the fog signal of one blast on the fog horn at intervals of not more than one minute.*

Fig. 62—*A sailing vessel when the wind is abaft of the beam sounds the fog signal of three blasts in succession on the fog horn at intervals not over one minute.*

Fig. 63—*A vessel not under control shows a day mark consisting of two black balls vertically arranged placed in a position where they can be best seen. The same day signal shall be displayed by self propelled suction dredges underway with their suctions on the bottom.*

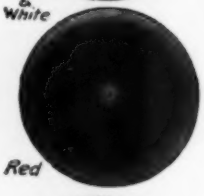



Fig. 64—*Vessels which are moored or anchored and engaged in laying pipe or operating on submarine construction display in day time two balls in a vertical line, the upper ball being painted with alternate black and white vertical stripes and the lower ball in bright red.*

Fig. 65—*A steam vessel under sail alone shows a day mark consisting of one black ball.*

Fig. 66—*A cable vessel in the day time shows a day mark consisting of three shapes, the upper and lower of which are black balls and the center shape is in the form of a double cone, base to base, painted bright red.*

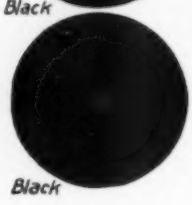



Fig. 67—*Dredges held in a stationary position show two balls in the day time, vertically arranged and placed in a position where they can best be seen.*

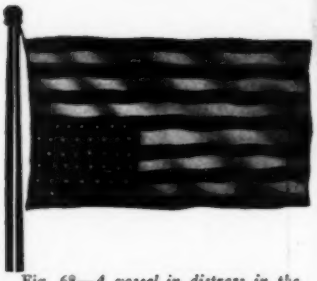


Fig. 68—*A vessel in distress in the day time may display the ensign upside down in the rigging.*

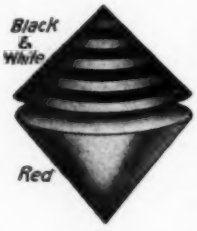



Fig. 69—*A vessel towing a submerged boat in day time shows two shapes, one above the other, in the form of a double cone base to base, the upper cone being painted with alternate horizontal stripes of black and white and the lower shape being painted bright red.*

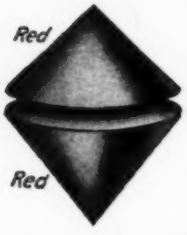



Fig. 70—*Steamers, lighters and other vessels made fast alongside a wreck or moored over a wreck, display a double cone base to base, both of which are painted bright red.*

Fig. 71—*A fishing vessel in the day time may display a basket in the rigging.*

Fig. 72 to 76—*Unlighted beacons or day marks are used for marking obstructions, entrances to harbors, important turning marks in a channel, etc. There are many and various shapes used. Some may be merely a pile or stake occasionally with a pointer indicating the channel. Others are timber structures of various designs carrying a target or some characteristic feature to attract attention. Others are iron or steel spindles with a barrel or some form of cage work at the top. Some types are monuments of stone. Some are strong, braced reinforced concrete tripods. A complete description of the day mark is to be found in the Buoy List.*

Fig. 72.

Fig. 74.

Fig. 75.

Fig. 73.

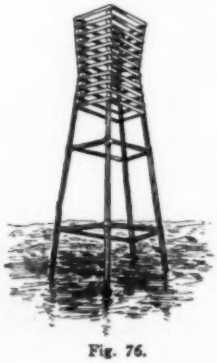


Fig. 76.

Fig. 78—*The above is the way a Government navigation light or lighthouse is indicated on the chart. A black star always indicates a light. The lighthouse's name (Ship John) is printed alongside the light. Its characteristic, in this case a white light occulting every 15 seconds, is also shown. The indications that the fog signal is a bell is also given on the chart. Ship John Light has a red sector in addition to a white sector. The white part of the light shows along the channel while the red rays are only visible from the shoal or shallow part of the waters surrounding the lighthouse.* Fig. 79—(below) *This is the chart's way of showing range lights. It will be seen that there are two sets of range lights shown on the section of the chart below. By keeping the two fixed lights in line, the mariner will be able to make an entrance into the small creek shown in the upper portion. The two range lights near the center indicate the entrance to the lower creek. By keeping these two lights in range, one will be able to navigate the narrow channel at the entrance to this creek. It will be seen that these two lights are white in color. One is occulting, the other flashing.*

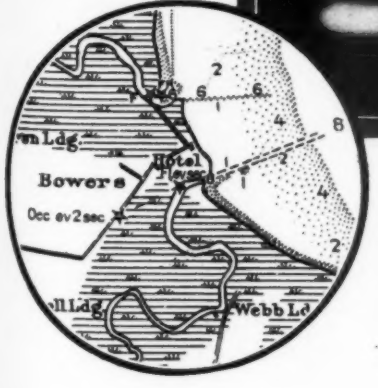



Fig. 77—*In order to avoid the likelihood of confusion between lights, endeavor is made to give the lights distinct characteristics. As much of the coast was lighted before the introduction of modern lighthouse apparatus, the lights were originally mostly fixed lights; the more important of these have been replaced by flashing or occulting apparatus, and such improvements will be continued. The characteristics of the lights are indicated in the list by abbreviations, and is shown in Fig. 77A*

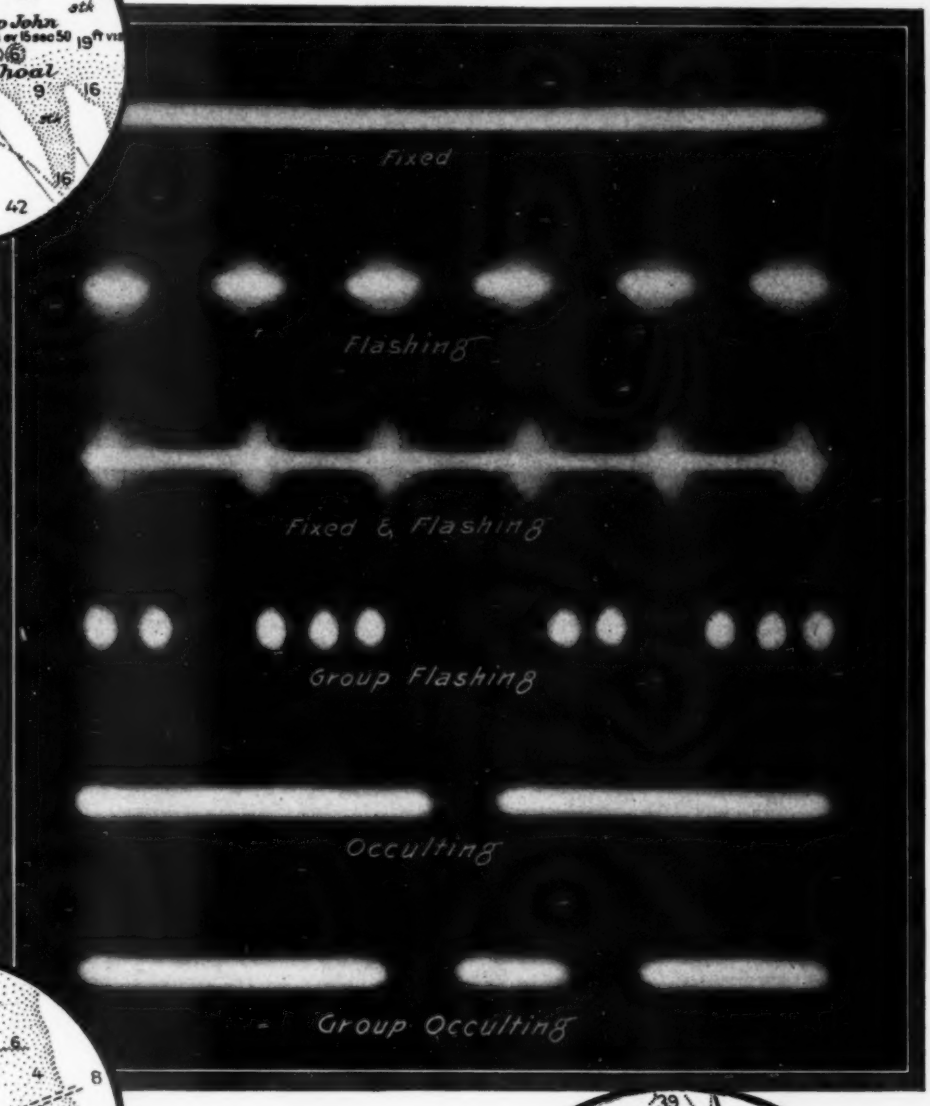



Fig. 80—(At the right) *Many lights and other aids to navigation around or in the vicinity of Delaware Breakwater. Lighthouses, lightships, range lights and range marks, breakwater, both red and white in color and having various fixed, flashing and occulting characteristics, abound.* *See page 94.*

Fig. 77A—

| Lights which Do Not Change Colors | Characteristic Phases |
|---|---|
| F—Fixed | A continuous steady light |
| Fl—Flashing | (a) Showing a single flash at regular intervals |
| F. Fl.—Fixed and flashing | (b) A steady light with total eclipse. A fixed light varied at regular intervals by one or more flashes, usually of greater brilliance. A flash is preceded and followed by a diminution of light or an eclipse |
| Gp. Fl. — Group flashing | Showing at regular intervals groups of flashes |
| Occ.—Occulting | A steady light suddenly and totally eclipsed by regular intervals |
| Gp. Occ.—Group occulting | A steady light suddenly and totally eclipsed by a group of two or more eclipses |

| Lights Which do change color. (Showing alternately white and red in various combinations) | |
|---|---|
| Alt—Alternating | |
| Alt—Fl. — Alternating flashing | |
| Alt. F. Fl.—Alternating fixed and flashing | |
| Alt. Gp. Fl. — Alternating group flashing | |
| Alt. Occ. — Alternating occulting | |

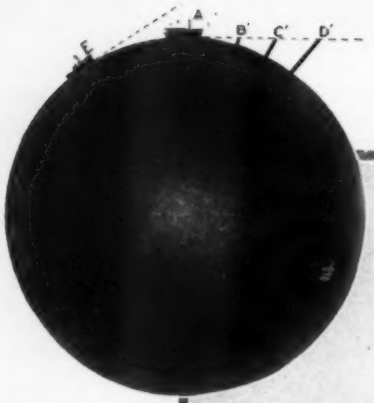
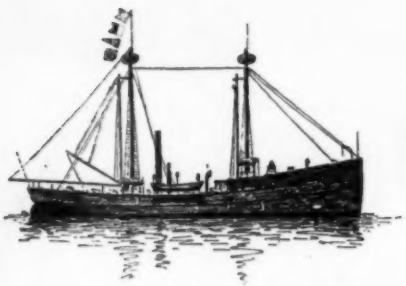
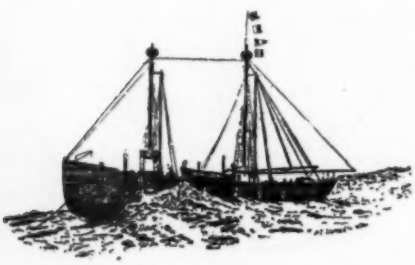


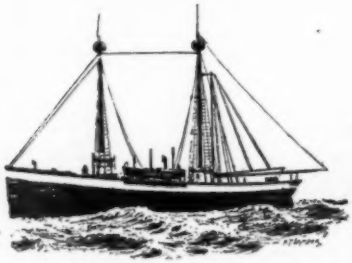

Fig. 81—(At the left)—*This figure is intended to indicate why it is necessary to have a lighthouse of a particular height in order that the light can be seen for a given distance. If one's boat is at point A his line of vision is along the horizontal dotted line. The horizon is in that direction from him. In order for a lighthouse located at point B on the earth's surface to be visible from A it must have a height equal to B B'. In order that a lighthouse at point C be visible at A, it must have a height equal to C C'. A lighthouse at D must have a height equal to D D', in order to be seen from the boat at point A. The boat at point E can see neither the boat A or the lighthouse at B, C or D as her line of vision is along the dotted line at E which does not touch any of these objects.*

Fig. 82—*The rig and appearance of every light vessel is different in order that the name and location of each may be determined to some degree of accuracy by the mariner. In addition to the name of the light vessel being painted in large letters on her sides, each has other characteristic markings, a complete description of which is to be found in the Light List.*

Fig. 83—*The Government Lighthouse at Minot's Ledge, Mass. The Light List describes this as a dark gray conical granite tower. The light, 85 feet above the sea level, has a candle power of 75,000 and is visible for 15 miles. The light is a group flashing. It flashes 143 every 30 seconds, that is, one flash—eclipse, 3 seconds—four flashes, eclipse three seconds—three flashes, eclipse 16 seconds. Each flash is of two seconds' duration.*







Figs. 84, 89—*Sketches of some of our lightships on the Atlantic Coast between Delaware Breakwater and Maine with the names omitted in order to emphasize the difference in appearance of the various lightships. The Light List fully describes each one of these in a way which will eliminate confusion.*

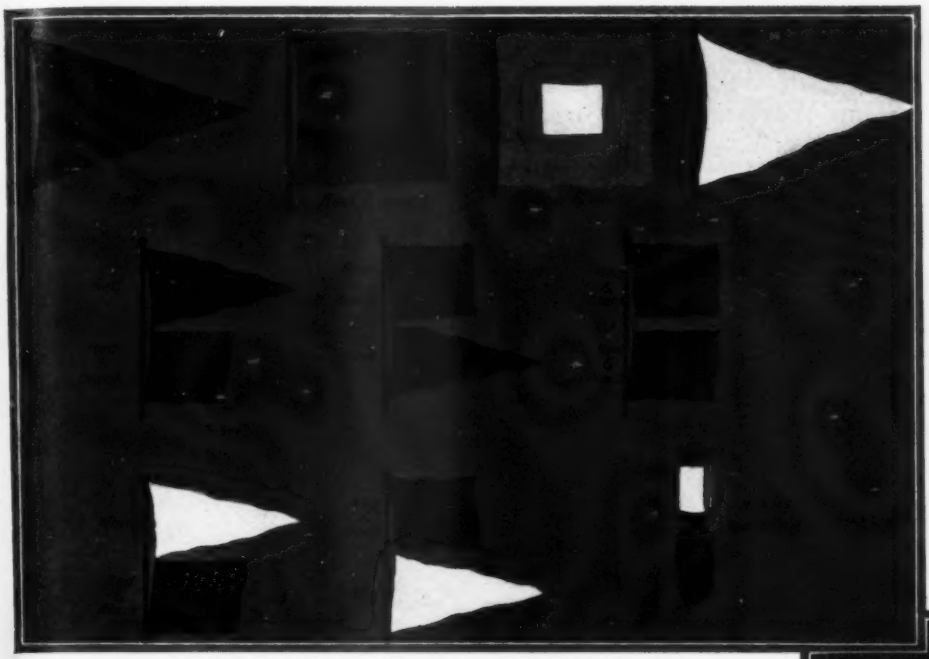


Fig. 91—*Storm Signals:*

*The storm warning (a red flag, with black center, indicates that a storm of marked violence is expected. This flag is never used alone.*

*A red pennant, displayed with the flags, indicates easterly winds, that is, from the northeast to south, inclusive, and that the storm center is approaching.*

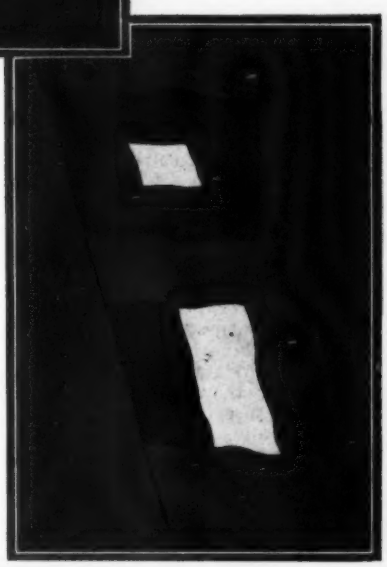
*A white pennant, displayed with the flags, indicates westerly winds, that is, from north to southwest, inclusive, and that the center has passed.*

*If the red pennant is hoisted above the storm warning, winds are expected from the northeast quadrant; when below, from the southeast quadrant.*

*If the white pennant is hoisted above the storm warning, winds are expected from the northwest quadrant; when below, from the southwest quadrant.*

*Night storm warnings—By night a red light will indicate easterly winds; a white above red light will indicate westerly winds.*

*A yellow flag with white center is a precautionary signal.*



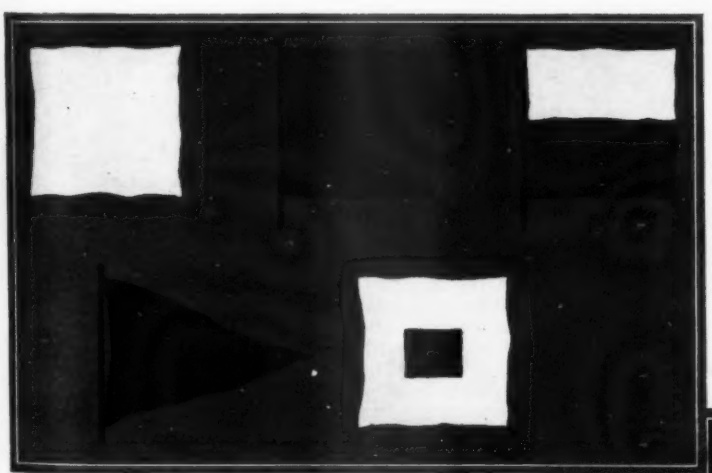


Fig. 90—*The weather signal flags used are as follows:*

*Flag No. 1. Square white flag.*
*Flag No. 2. Square blue flag.*
*Flag No. 3. Square flag, white on upper half, and blue on lower half.*
*Flag No. 4. Triangular black flag.*
*Flag No. 5. Square white flag with black square in center.*

*Number 1 indicates clear or fair weather... Number 2 indicates rain or snow. Number 3 indicates that local rains or showers will occur, and that the rainfall will not be general. Number 4 always refers to temperature; when placed above numbers 1, 2 or 3, it indicates warmer weather; when placed below numbers 1, 2 or 3, it indicates colder weather; when not displayed, the indications are that the temperature will remain stationary, or that the change in temperature will not vary more than four degrees from the temperature of the same hour of the preceding day from March to October, inclusive, and not more than six degrees for the remaining months of the year. Number 5 indicates the approach of a sudden and decided fall in temperature. When number 5 is displayed, number 4 is always omitted. Examples:*

*Nos. 1 and 4, "Fair weather. Colder."*
*Nos. 4 and 2, "Warmer, Rain or Snow."*
*Nos. 4, 1, and 2, "Warmer, fair weather, followed by rain or snow."*
*Nos. 1 and 5, "Fair weather. Cold wave."*

Fig. 93—*Signals for a Pilot*

*A pilot may be obtained by displaying any of the following:*

*1. The International Code pilot signal indicated by PT.*

*2. The International Code flag S, with or without the code pennant over it.*

*3. The distance signal consisting of a cone point upward having above it two balls or shapes resembling balls.*

*4. The Jack, hoisted at the fore.*

Fig. 92—*Distress Signals—At Night*

*1. A gun or other explosive signal fired at intervals of about a minute.*

*2. Flames on the vessel (as from a burning tar barrel, oil barrel, etc.).*

*3. Rockets or shells, throwing stars of any color, etc., fired one at a time at short intervals.*

*4. The continuous sounding of any fog-signaling apparatus.*

# Simplified Safety at Sea

## Government Lighthouses, Lightships, Beacons and Spindles to Aid the Mariner—Storm, Weather and Fog Signals—Signals to Give if Shipwrecked

MoToR BoatinG's Correspondence Course—Lesson No. 3

See pages 19-25

THE type of construction adopted in lighthouse structures depends largely on the importance of the light and the foundation conditions.

Post lights (see Fig. 72) are generally a single timber post, with a shelf or bracket for the lantern. In some cases ladders are attached, and to assist in identifying the aid by day, wooden wing boards for day mark purposes are frequently added. For similar construction in water, single piles, either timber or concrete, are used. A small service box for the lantern and supplies is often added.

Where the light is of more importance, framed timber towers have been used, generally built with four posts on proper foundations, battered and provided with the necessary framing and bracing, with a ladder and service box. Similar structures in water are generally of three piles, driven on a batter and forming a cluster at the top.

Recent improvements along this line include structural steel skeleton towers, also similar towers of iron pipe. Standard plans have been prepared for each of these types, both of which are useful when quickness of construction is desired. Each type is square in plan and strongly braced, with due provision allowed for corrosion in proportioning the sizes of the members. For similar structures in water, concrete pile foundation structures consisting of four, seven or nine piles, with suitable cast-iron struts and structural bracing, have been developed and standard plans prepared for each type.

### UNLIGHTED BEACONS AND DAY MARKS
(See Figs. 73-76)

In addition to the foregoing types, which are principally adopted for non-attended lights, mention should be made of unlighted beacons, or day marks. Some of these may be merely a pile or stake, occasionally with a pointer indicating the channel; others are timber structures of various designs, carrying a target or some other characteristic feature to attract attention; others are iron or steel spindles with a barrel or some form of cage work at the top, and some older types are monuments of stone. One type is that of strongly braced reinforced concrete tripods, to replace old wooden tripods destroyed by the sea. In some localities, where fog is prevalent part of the year, echo boards are used. These are rather long wall-like structures with projecting wings, to permit steamers obtaining an echo from their whistles in passing. These sometimes carry a post light on top of the board.

### ATTENDED LIGHTS
(See Fig. 83)

In case of attended lights where resident keepers are employed, which may be considered as lighthouses proper, there are also many types. A common form, frequently used for harbor or lake lights, is a combined tower and dwelling of timber or brick construction. Sometimes the tower only is of masonry, while the dwelling is frame. For the more important lights, the tower is detached from the dwellings and as a rule is of fireproof construction. Most of the older towers of this type are built of brick or stone masonry, with stairways, lantern, and other appurtenances of cast iron. Others of a more recent type have a structural open framework of wrought iron or steel, usually with an inclosed stair well in the center. In still more recent years reinforced concrete towers have been used and will probably be more extensively adopted in the future.

A completely equipped light station on a land site usually consists of the light tower, oil house, fog-signal building, keepers' dwellings, workshop, water supply and drainage systems, landing wharf, boat-house and ways, barn, and the usual outbuildings, roads, walks, and fences; although, owing to the restricted area of some sites, several of these purposes may be served by a single building. On submarine sites the whole station is frequently confined to one structure.

Many lighthouses at the entrances to harbors are built on the ends of breakwaters or pierheads, utilizing, as a rule, such structures as the foundation. In such cases the problem is not essentially different from ordinary shore construction. In the case of lighthouses on submerged sites the engineering features are important. Where the bottom is rocky or hard, the lighthouse is either built directly on the rock or on a pier.

### LIGHTING APPRATUS
(See Figs. 50-52)

The incandescent oil-vapor lamp, which is now generally employed for important lights, burns vaporized kerosene under an incandescent mantle, giving a much more powerful light with little or no increase in oil consumption. The kerosene is stored in a convenient size tank and is forced by compressed air, produced by operating a hand pump attached to either the oil tank or a separate air tank, into the vaporizer of the lamp. The air pressure varies from about 40 to 60 pounds per square inch and decreases so slowly during the operation of the light that a few strokes of the pump once or twice a night serve to maintain the required pressure. The kerosene is concerted into vapor by a preheating torch when starting the lamp and subsequently by the heat of the mantle itself. The vapor issues from a minute nozzle, mixes with a proper supply of air, and ignites as a blue flame in a Bunsen burner under the mantle, which is thereby brought to a brilliant incandescence.

Various other illuminants are now in use; oil gas is extensively used, particularly for lighted buoys; acetylene gas is used for lighted buoys and unattended lighted beacons; electric arc and incandescent lights and coal-gas lights are also used in special instances. Electric lights with distant control are employed in a number of cases where a reliable source of current may be obtained. Such lights may be on pierheads or structures built in the water, and can be easily operated by a switch on shore connected to the light by cable.

All lights on the seacoast, with a few exceptions, are exhibited throughout the year, between sunset and sunrise. On the northern lakes and rivers lights are exhibited from sunset to sunrise at all seasons when vessels can enter the ports or are navigating in their vicinity. Some of these lights, notably on Lake Michigan, are maintained throughout the year. The closed time varies with the seasons, generally embracing a part of December, January, February, and a part or all of March. Gas buoys and light vessels in these localities are replaced by unlighted buoys in the fall when endangered by ice conditions, and again placed on their stations as early as practicable in the spring.

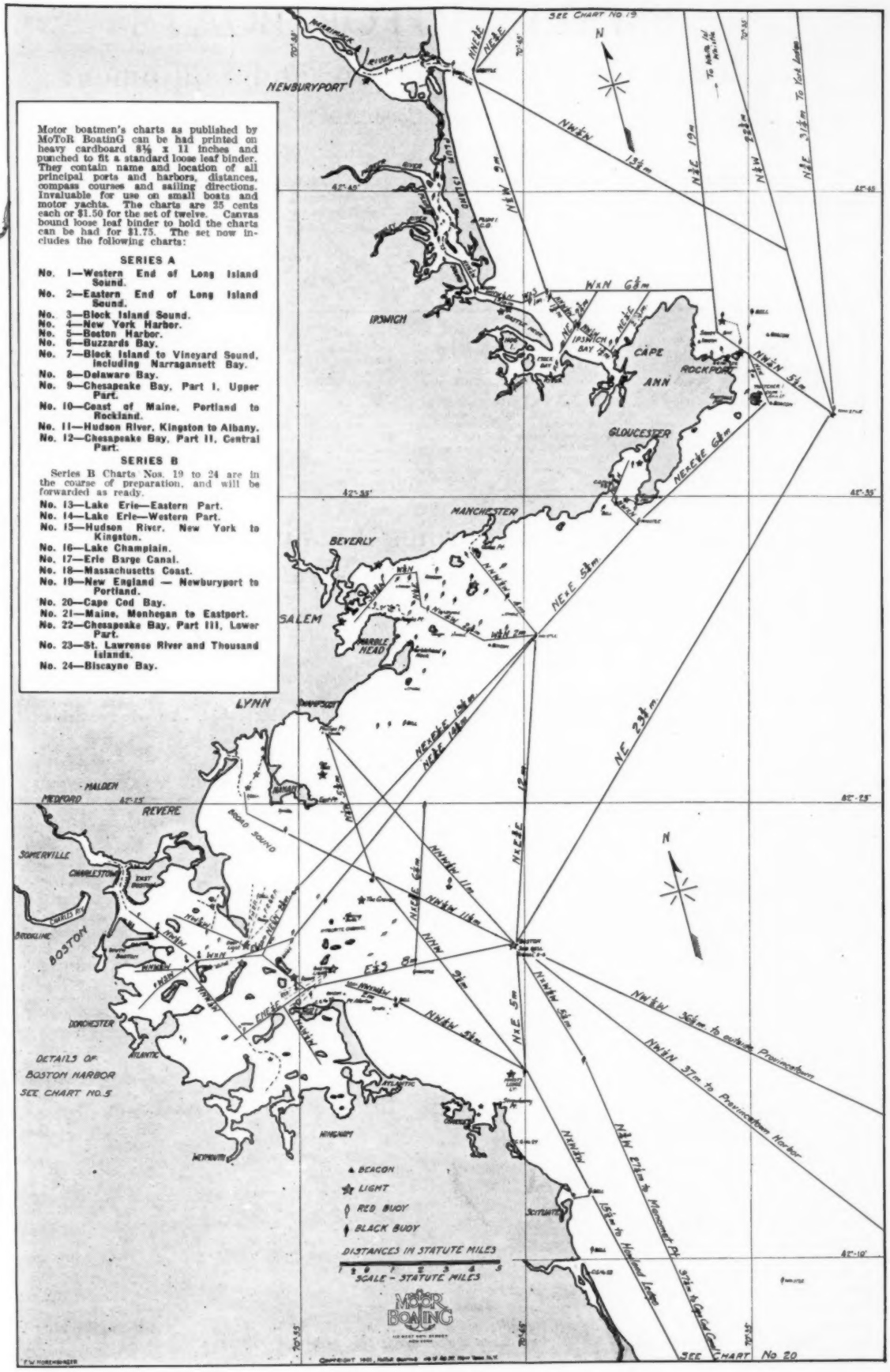
### DISTINCTIVENESS AND CHARACTERISTICS OF LIGHTS
(See Figs. 77 and 77A)

In order to avoid the likelihood of confusion between lights, endeavor is made to give the lights distinct characteristics. As much of the coast was lighted before the introduction of modern lighthouse apparatus, the original lights were as a rule fixed, but at the more important of

(*Continued on page* 84)

# Motor Boatmen's Chart No. 18—Massachusetts Coast, Scituate to Newburyport

Use in Connection With Coast & Geodetic Survey Charts Nos. 109, 1206, 242, 243, 244, 246, 248, 331 & 337A


Motor boatmen's charts as published by MoToR BoatinG can be had printed on heavy cardboard 8½ x 11 inches and punched to fit a standard loose leaf binder. They contain name and location of all principal ports and harbors, distances, compass courses and sailing directions. Invaluable for use on small boats and motor yachts. The charts are 25 cents each or $1.50 for the set of twelve. Canvas bound loose leaf binder to hold the charts can be had for $1.75. The set now includes the following charts:
SERIES A
No. 1—Western End of Long Island Sound.
No. 2—Eastern End of Long Island Sound.
No. 3—Block Island Sound.
No. 4—New York Harbor.
No. 5—Boston Harbor.
No. 6—Buzzards Bay.
No. 7—Block Island to Vineyard Sound, including Narragansett Bay.
No. 8—Delaware Bay.
No. 9—Chesapeake Bay, Part I, Upper Part.
No. 10—Coast of Maine, Portland to Rockland.
No. 11—Hudson River, Kingston to Albany.
No. 12—Chesapeake Bay, Part II, Central Part.
SERIES B
Series B Charts Nos. 19 to 24 are in the course of preparation, and will be forwarded as ready.
No. 13—Lake Erie—Eastern Part.
No. 14—Lake Erie—Western Part.
No. 15—Hudson River, New York to Kingston.
No. 16—Lake Champlain.
No. 17—Erie Barge Canal.
No. 18—Massachusetts Coast.
No. 19—New England — Newburyport to Portland.
No. 20—Cape Cod Bay.
No. 21—Maine, Monhegan to Eastport.
No. 22—Chesapeake Bay, Part III, Lower Part.
No. 23—St. Lawrence River and Thousand Islands.
No. 24—Biscayne Bay.
SEE CHART NO. 19
NEWBURYPORT
IPSWICH
CAPE ANN
ROCKPORT
GLOUCESTER
MANCHESTER
BEVERLY
SALEM
MARBLEHEAD
LYNN
MALDEN
MEDFORD
REVERE
SOMERVILLE
CHARLESTOWN
BOSTON
BROOKLINE
DORCHESTER
HINGHAM
WEYMOUTH
SCITUATE
DETAILS OF BOSTON HARBOR SEE CHART NO. 5
BEACON
LIGHT
RED BUOY
BLACK BUOY
DISTANCES IN STATUTE MILES
SCALE - STATUTE MILES
MOTOR BOATING
SEE CHART No. 20

# SMALL MOTOR BOATS

## Their Care, Construction, and Equipment

### A Monthly Prize Contest Conducted by Motor Boatmen

Questions Submitted for the June Prize Contest

**1. Design the best form or arrangement of gasoline line for conveying fuel from the tank to the carburetor keeping in mind the kind and size of pipe or tubing to use, fittings, strainers and best method of eliminating all trouble from clogging of the line.**

*(Suggested by A. R. T., Brooklyn, N. Y.)*

**2. Explain and illustrate best method of installing the ignition and lighting wires to protect from moisture either in open craft or cruisers.**

*(Suggested by A. F. O., Akron, O.)*

**3. How could you locate and repair leaks in a canvas covered deck.**

*(Suggested by L. T. M., New York, N. Y.)*

#### Rules for the Prize Contest

ANSWERS to the above questions for the June issue, addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York, must be in our hands on or before April 25, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used.

QUESTIONS for the next contest must reach us on or before April 25. The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions below, any article or articles sold by an advertiser advertising in the current issue of MoToR BoatinG of which the advertised price does not exceed $25, or a credit of $25 on any article which sells for more than that amount. There are three prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer all.

For answers which we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR BoatinG of which the advertised price does not exceed $5, or a credit of $5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us. The winners should be particular to specify from which advertisers they desire to have their prizes ordered.

# Improving the Turning Qualities of a Boat

## The Boat Which Is Hard to Steer and Slow to Turn Can Be Improved by Following Some of the Suggestions Given

Answers to the Following Question, Published in February Issue

*"What can you suggest towards improving the turning qualities of a hard turning boat?"*

## *Rudder Must Have Proper Area and Shape*

(The Prize-Winning Answer)

A BOAT'S maneuvering may be considered bad if it will not turn easily and also bad if it turns too easily, i. e., when it will not hold its course. Both troubles have assets that make them highly desirable in certain cases. Thus a battleship or a runabout should turn very easily, while a liner or a cruiser must hold a straight course.

Unfortunately, as in the case of most motor boat ills, the lack of positive manoeuvering qualities cannot be corrected by the application of any one simple rule. Good or bad, it is dependent upon a number of factors of about equal importance. It seems then that, before suggesting methods of improvement, a brief analysis of the above factors should be made. Then a comparison of our conclusions, with the conditions as they exist on your own boat, should at once show you the source of your difficulties and perhaps offer a remedy.

A first consideration should be given the proper size of the rudder. This was well presented in a prize contest contribution by J. A. W., Baltimore, Md., which appeared in the May, 1920, issue of MoToR BoatinG. Reference should be made to the charts therein given and your rudder area checked. A fairly good rule for ordinary boats is that the area of the rudder should be from 3% to 8% of the lateral plane. That is, it should be from 1/33 to 1/12 the product obtained by multiplying the water-line length by the mean draft.

The shape of the rudder is also treated in the above mentioned article. For cruisers a rectangular shape with rounded corners is best, see Fig. 1. Narrow hulls are steadied by deep dagger or spade-shaped rudders, as in Fig. 2. The center of pressure of such rudders is low and consequently tends to trip outward and away from the path of the boat when turning, thus causing the boat to heel to the inside of the course. This type is more effective than the shallow type, area for area, but, having a greater leading edge and greater area, it offers greater resistance. The shallow type, as in Fig. 3, is well suited to high speed. In all cases the stock should not be more than 1/5 the width of the blade aft of the leading edge. The area forward should be ¼ the area aft of the stock. The center of area of the rudder should be slightly higher than the center of the propeller to counter-balance the effect of the lower half of the propeller wake against the weaker upper half.

Steerage cannot be accomplished unless the rudder

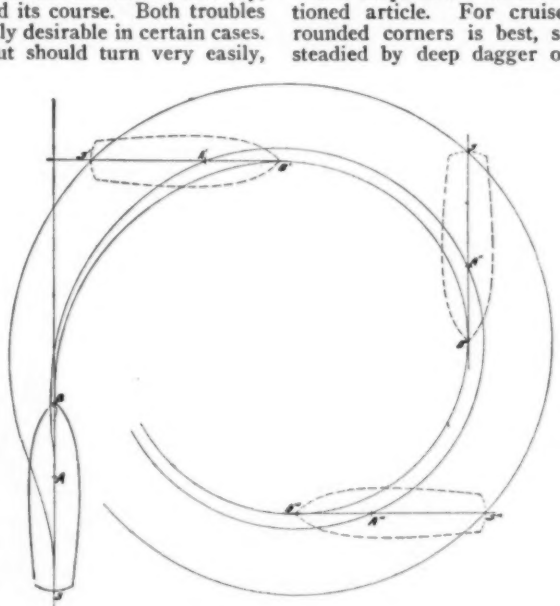


FIGURE 1

*C. L. B. submits a diagram to show the action of the boat when the rudder is put hard over*

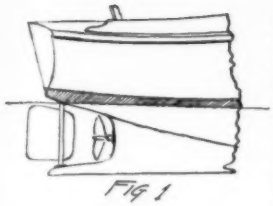


FIG 1

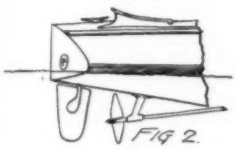


FIG 2.

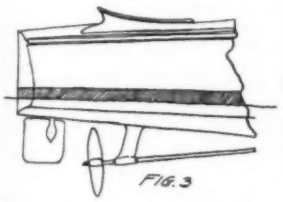


FIG. 3

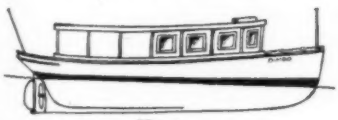


FIG 4

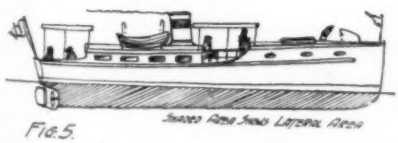


FIG. 5.

*The relation between propeller and rudder affects the steering, says P. L. R.*

passes through and deflects a certain amount of water. Since the pressure on a rudder varies approximately as the square of the speed, the faster the boat the more effective the rudder and hence the smaller may be its area. Likewise, the more water that passes the rudder the better. For this reason advantage is taken of the propeller wake. Thus the rudder must always be placed directly abaft and close to the propeller, and so hung that, at any angle of helm, it shall always receive the direct wash of the propeller. In this position a boat will actually maneuver before it gains headway. When impossible to install the rudder abaft the propeller twin rudders should be used; in no case may the rudder be placed forward of the propeller.

From the preceding paragraph it should be clear that the rudder must receive all the water possible. In other words, aside from the propeller wake, the run, or flow of water aft, must be free and easy. A boat that is very full aft with short run will steer very poorly at all speeds within its range. Such a boat is illustrated in Fig. 4. A boat having a long, easy run will, as a rule, handle well.

When a rudder is turned to an angle it deflects the water that banks up forward of it. This causes an excess pressure on that side which tends to push the stern to the opposite side. The boat's lateral plane resists side motion and hence a turning effort exists between the pressure on the rudder and the center of lateral plane or lateral resistance. In reality, the boat pivots about a point slightly forward of the center of lateral area. This might be called the virtual center of lateral resistance. The boat at once assumes a spiral path, culminating in a circular course if the angle of helm is maintained. The greater the distance between the rudder and the C. L. R., the greater the leverage and turning power.

While lack of lateral plane is much felt in certain cases, such as in the hydroplane, etc., the amount is not so important as its distribution. It is evident that the distribution really determines the amount of leverage. A boat having a long lateral plane, not much cut away at the ends, as in Fig. 5, will turn hard but will hold its course very well. A boat with cut-away forefoot and deadwood, as in Fig. 6, will answer the helm quickly and well but will require constant attention to keep it on its course. Hydroplanes have bow rudders because, at speed, their lateral plane takes a position so far aft. High-speed runabouts have small turning levers when planing, but their lateral plane is also very short. This, together with the high speed, makes them turn with remarkable ease with small rudders. Figs. 8 and 9 show boats that will turn easily; the addition of a skeg or deadwood will increase the area opposed to lateral swinging and shorten the turning lever, thus making them hold straighter courses and turn harder.

In the foregoing we have treated all sides of the question, a summary is in order. First see that your rudder has the correct area. See also that it has the proper form. Then consider its position with regard to the propeller and its wake. The above three considerations may easily be made correct if found at fault. If the run, or flow aft, is bad there is little that can be done towards correction. There remains the lateral plane. If the boat turns too hard trim down the deadwood or skeg; the farther aft the better. Little can be done to the forefoot of a completed boat. We know a designer who improved a hard-turning boat by the addition of a fin or keel forward, as in Fig. 10. This threw the center of area forward and increased the leverage. This, however, has the disadvantage of increasing the wetted surface and hence the resistance of the boat. If the boats turns too easily add a skeg.

P. L. R., New Rochelle, N. Y.

## *Locate the Pivoting Point*

BEFORE attempting to improve the turning qualities of any boat, let us see what happens when we put the rudder over. The path followed by a boat when turning is shown by Fig. 1. The Fig. BAS is the boat before starting to turn. Three other positions are also shown dotted. When the rudder is moved, in this case to starboard, the bow moves towards the same side, while the stern swings in an opposite direction. A point marked A in the figure is the pivoting point and it usually lies forward of amidships. The lines B B′ B″ B‴, A A′ A″ A‴, and S S′ S″ S‴, represent the paths which the bow, the pivoting point and the stern will follow while making the turn. Whether a boat is slow or quick in answering her helm, or whether she will turn in a circle of large or small radius, is dependent on several things. First, the rudder area must be sufficient for the boat in question. MoToR BoatinG has had some excellent data on rudder areas. It is not possible to give any fixed rule, but in general a boat with long, straight keel and solid deadwood will require a rudder area equal to about 10% of the area of the lateral plane. If without deadwood, as are most runabouts and some cruisers, 5% to 7% is plenty. For high speed the area may be further reduced, but should be large enough for maneuvering at low speeds. If it is possible compare your rudder with that of some similar boat which you know has good steering qualities. Second, the greatest turning moment is obtained with moderate angles of helm. An angle of 35 degrees from the (*Continued on page* 63)

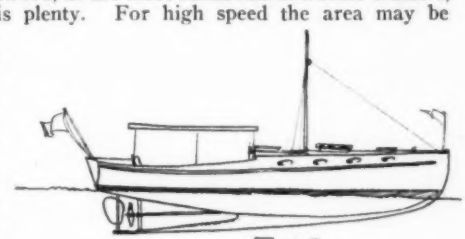


FIG 6

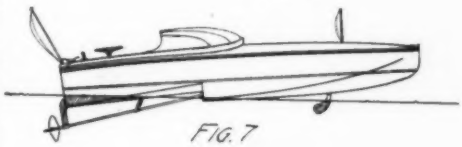


FIG. 7

FIG 8.

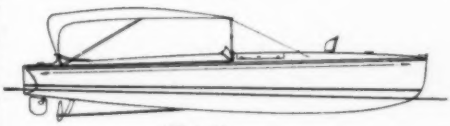


FIG 9.

FIG. 10.

*A boat which steered too easily was corrected by adding a fin or keel forward, according to P. L. R.*

# Does Your Whistle Blow?

## Information Designed to Permit All Boats to Equip Themselves with a Whistle Outfit Which Can Be Heard

Answers to the Following Question, Published in February Issue

*"Explain and illustrate a satisfactory whistle outfit which can be readily made by an amateur."*

### *A Whistle Outfit for the Amateur*

(The Prize-Winning Answer)

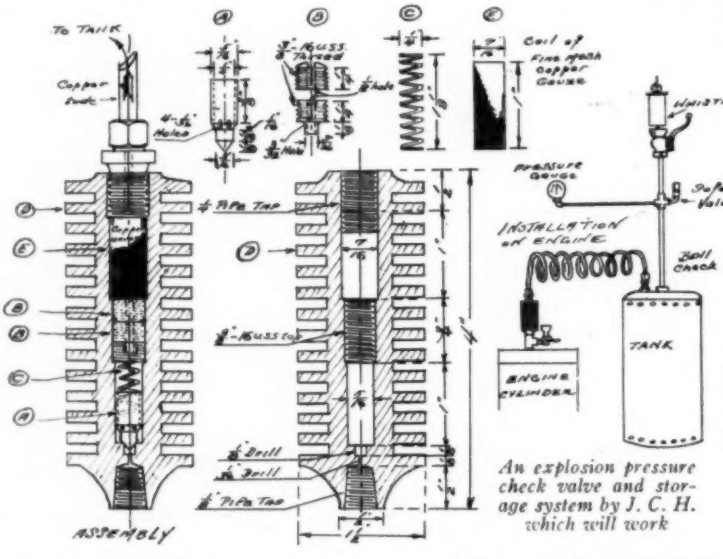
THE following description and drawing clearly show the details and construction of a very safe and efficient check valve that utilizes the exhaust gas of an engine to blow the whistle of the writer's boat. The main body D is made of an old piece of 1½-inch shafting, 4 inches long, machined and drilled to the dimensions shown in the drawing. The outside was flanged as shown to provide more radiating surface for cooling the gas much the same as the flanges on a motorcycle engine. The hole sizes 7/16-inch and 5/16-inch provide the proper sizes also for the two taps ¼-inch pipe and ⅜-inch U. S. S. The check valve A is made of 5/16-inch brass rod drilled out with ¼-inch drill and machined to sizes shown; 4-1/32-inch holes are drilled on the angle to meet the ¼-inch hole in the valve as per sketch to allow the gas to get past the valve. The two regulating screws B are made of any standard ⅜-inch brass screws drilled out for ⅛-inch hole and the lower to have a small projection left on to center the spring. The spring C is made up of about 1/64-inch wire about 1⅛ inches long containing about 9 to 10 coils. E is a coil of fine mesh copper gauze coiled up very tight.

In installing, the valve is fitted to the cylinder, on one of the valve caps, or displacing as in the sketch which may be connected through a pipe T, as the sketch shows. The valve A is dropped on its seat and instead of being ground in it is tapped lightly with a hammer and small rod. This produces a very narrow seat, which will always stay tight and provide small room for carbon to nest. The spring is then inserted and the lower screw turned down on the spring. The tension on the spring should then be tightened by screwing down on the screw until no gas escapes while the motor is cranked by hand. In other words, the valve is set until it holds the compression of the engine without leakage. The spring screw is then locked in place by the upper screw. The copper gauze coil is then placed over the screws and a ¼-inch pipe size coupling for ⅛-inch dia. copper tubing is used as a cap. The copper tubing connecting the check with the tank should be longer than the straight line distance and should be coiled as in the drawing. This provides also for the cooling of the gas so that by the time it reaches the tank it will be fairly cold. The tank should be a purchased one, of about 7 to 10 gal. capacity, and tested to at least 125 lbs. per square inch. In piping the whistle use ⅛-inch standard iron pipe and place a pressure gauge and a safety valve between the tank and whistle, the gauge preferably in a place where it can be seen. The safety valve can be bought in any marine supply house, or it can be made the same as the check valve, omitting the copper coil ending at the two screws. In operation the valve works as follows:

No explosive or live gas can be passed to the tank, as the valve has been set to hold the compression. But on the explosion or firing stroke the cylinder pressure increases to 3 to 4 times the compression pressure and a small amount of gas shoots past the valve, which opens under the increased pressure. This gas passes through the small holes in the check up the hollow check through the ⅛-inch hole in the screws past the copper gauge and out into the tank. The copper gauze breaks any live flame or spark that may reach it, and therefore no spark or flame can reach the tank, making it absolutely safe against explosion. Nearly every boatman has some good friend who is a machinist or knows a machinist who will turn the outfit up for him, and the boatman will always have a safe, reliable and efficient whistle outfit and one that requires no attention whatsoever and one that does not need much power to operate. In setting the safety valve it should be regulated so that the pressure is released when the pressure gauge shows about 70 pounds.

Similar check valves have stored gas at pressures as high as 150 pounds per square inch, affording at all times a sufficient volume and pressure to give a most surprising blast of the whistle.

J. C. H.,
Bronx, N. Y.




*An explosion pressure check valve and storage system by J. C. H. which will work*

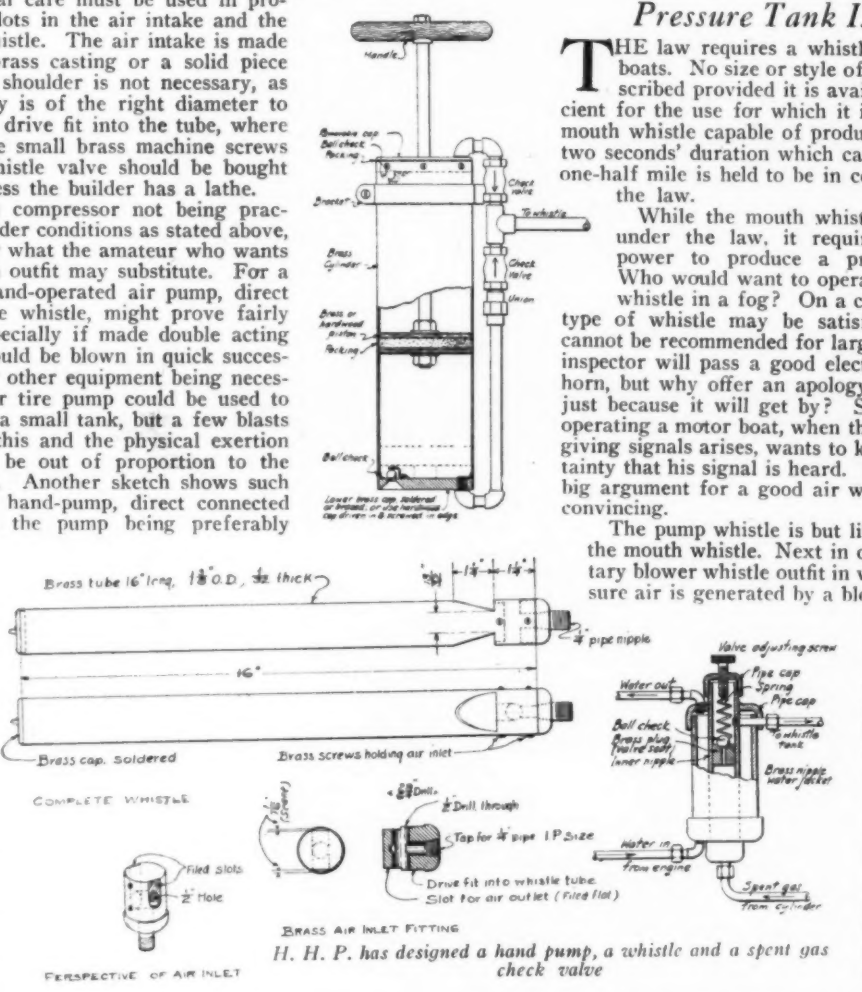
### *Home Made Whistle Outfits*

EVERY boat twenty-five feet and over should be equipped with a real whistle outfit, unless used only upon some small lake or stream where there is not much traffic. By a real outfit is meant a substantial air compressor run from the engine and preferably mounted upon it as an integral part; as large a tank as possible and one capable of holding at least 70 pounds air pressure; a clutch or other means of disengaging compressor when tank is full (not necessarily automatic), safety valve, gauge, and a whistle large enough to make a noise above that of a peanut stand. The writer, on a 28-footer used on San Francisco Bay, installed a 16-gallon tank which habitually carried 90 pounds pressure, but double the tank capacity would have been better; the whistle was 16 inches long, home made as described below, and gave a loud and very deep single tone which never failed to draw a reply from passing steamers.

Such a compressor, as well as the safety valve and gauges, would be impossible for an amateur to construct unless equipped with an engine lathe and a description of such would be out of place here. Often a second-hand compressor can be obtained from a garage at a reasonable

price. The whistle itself, however, may be easily made with a few bench tools, and a sketch is shown of one which proved very satisfactory when operated on 60 pounds of air. A smaller one could be constructed provided the same proportions were adhered to, but it was found that a slight deviation from those shown resulted in failure. The smaller the scale used, the higher would be the resulting tone of the whistle. Especial care must be used in proportioning the slots in the air intake and the throat of the whistle. The air intake is made either from a brass casting or a solid piece and the bottom shoulder is not necessary, as long as the body is of the right diameter to make a push or drive fit into the tube, where it is held by the small brass machine screws shown. The whistle valve should be bought ready made unless the builder has a lathe.

A home-made compressor not being practicable unless under conditions as stated above, we will consider what the amateur who wants to build his own outfit may substitute. For a small boat, a hand-operated air pump, direct connected to the whistle, might prove fairly satisfactory, especially if made double acting so that blasts could be blown in quick succession, no tank or other equipment being necessary. A regular tire pump could be used to compress air in a small tank, but a few blasts would exhaust this and the physical exertion required would be out of proportion to the results obtained. Another sketch shows such a double-acting hand-pump, direct connected to the whistle, the pump being preferably installed under the deck or behind a bulkhead with only the handle projecting. It it made with a brass cylinder of as large a diameter as possible to obtain, one end cap soldered or brazed in place and the other removable. The ball valves shown are easily constructed by drilling the cap and tapping the steel ball down to a good seat. A strip brass clip screwed over the ball prevents it from coming all the way out. If such valves are not used, regular check valves as shown on the whistle line may be screwed into the end caps. It can be seen that the duration of the blast obtained from the whistle operated from a pump of this kind will depend upon the length of stroke.




*H. H. P. has designed a hand pump, a whistle and a spent gas check valve*

Another source of pressure, one much in vogue a few years ago, is the engine cylinder itself; a small check valve being screwed into the priming cup opening and connected by copper tubing to the pressure tank. At every explosion in the cylinder a little of the burned gas is forced into the tank through the check valve. In operating a device of this kind, the danger is always present of fresh mixture being forced into the tank through a leaky valve or weak valve spring; therefore a tank capable of withstanding a possible explosion pressure should be used; either a brazing tank tested to 300 or more pounds, or one built up of 6- to 8-inch wrought-iron pipe with caps screwed to each end and set in shellac or litharge. The check valve must be air cooled or water jacketed, due to the fact that the hot engine gas is constantly passing through; the water cooled type is much the better. The sketch shows such a water-cooled check valve built up of brass pipe fittings, the gas and water lines being flexible copper tubing with compression couplings. The gas outlet hole, under the ball check, is small, a sixteenth to an eighth in diameter, depending upon the size of the engine cylinder, being sufficient. Great care must be taken to make the valve seat tight and to adjust the spring so that the explosion pressure only, and not that of the cylinder compression, will lift the valve.

H. H. P., Oakland, Calif.

## *Pressure Tank Is Best*

THE law requires a whistle on all motor boats. No size or style of whistle is prescribed provided it is available and sufficient for the use for which it is intended. A mouth whistle capable of producing a blast of two seconds' duration which can be heard for one-half mile is held to be in compliance with the law.

While the mouth whistle may get by under the law, it requires some lung power to produce a prolonged blast. Who would want to operate this type of whistle in a fog? On a class 1 boat this type of whistle may be satisfactory, but it cannot be recommended for larger boats. The inspector will pass a good electric automobile horn, but why offer an apology for a whistle just because it will get by? Surely the man operating a motor boat, when the necessity for giving signals arises, wants to know for a certainty that his signal is heard. This is the one big argument for a good air whistle and it is convincing.

The pump whistle is but little better than the mouth whistle. Next in order is the rotary blower whistle outfit in which low pressure air is generated by a blower driven by friction with the flywheel. This outfit produces a satisfactory blast and requires little space, but it is useless when the motor is not running. The real whistle outfit is the collector or compressor installation in which compressed air is stored in a tank ready for use whether the motor is running or not.

For cruisers having the whistle on the mast, stack or above the awning top, the accumulator (collector) is a satisfactory means of generating the whistle pressure. On an open boat, or where the whistle is close to the deck, the foul smell of burned gas and oil which generally comes from the collector installation is not agreeable. The better grades of accumulators are water cooled and provided with a regulating screw for controlling the pressure. Their construction is such that it is impossible for any unburned gas to get into the tank, as the valve will not open at a pressure below that of the explosion. Properly adjusted and kept clean this appliance will operate satisfactorily, and the pressure is automatically generated and maintained as soon as the motor is started. The collector is made to replace a priming cup and the objection to it is the smell.

The compressor will furnish clean, fresh air at all times, and the only attention it requires besides stopping and starting is a little oil occasionally. The better compressors are provided with an adjustable relief valve and will pop off into the air at the set pressure. The compressor is generally belt driven from the propeller shaft and provided with a loose pulley and belt shifter or a friction clutch.

(*Continued on page 64*)

# Timing the Ignition and Valves of a Gasoline Motor

## Many Practical Suggestions which Simplify this Delicate Operation to the Point Where Any One Should Be Able to Check His Own Motor

Answers to the Following Question, Published in February Issue

*"Explain with diagrams a reliable method of timing the ignition and valves of a gasoline motor."*

### *Timing of Gasoline Engine*

(The Prize-Winning Answer)

ON account of so many factors entering into the calculation for setting the cams for the operation of the valves, I can only give a general or average setting here. Manufacturers have made elaborate calculations on this point, especially for high-speed engines, bringing the figures out to fractions of degrees in their zeal to get the greatest efficiency possible from their engine. The manufacturer of your engine should be able to give you the correct setting, which varies in high- and low-speed engines, size of valves, etc., so the following, it must be remembered, are only average:

Starting with the piston at the top dead center,——

Inlet valve will just start to open 15 degrees past center, and be entirely closed 30 degrees past bottom dead center, or 195 degrees from start to finish.

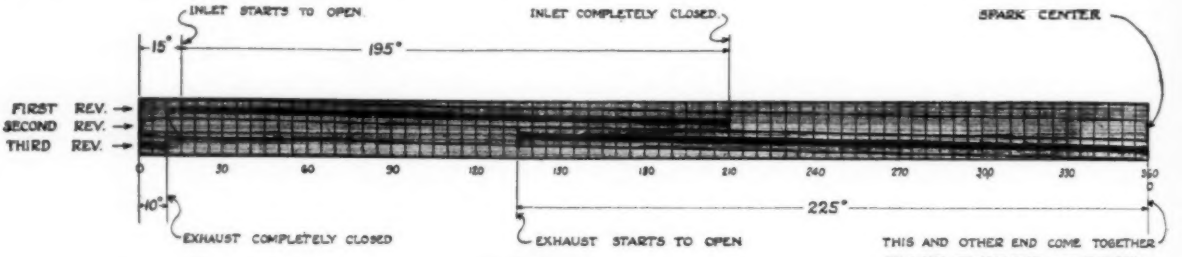
Starting the next revolution with the piston at the top dead center,——

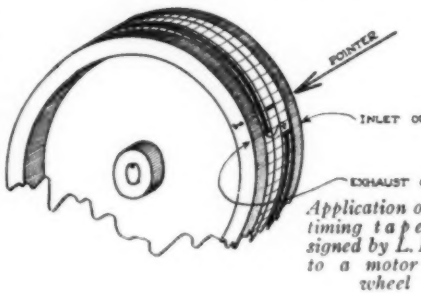
At this point the contacts of the timer should just start to be made, if the spark control lever is set at its mid-position, and then moving on. Exhaust valve should just start to open 135 degrees past top dead center, and be entirely closed 10 degrees past top dead center of the third revolution, or 235 degrees from start to finish.

This third revolution is really the beginning over again of the first revolution, for 5 degrees after the exhaust valve is entirely closed the inlet valve starts to open.

Now to transfer this to the engine in a very simple and accurate manner it will be necessary to mark a strip of stiff paper as per the illustration. Provide a strip of paper about 2½ inches wide and in length exactly equal to the circumference of the flywheel, that is, the paper ends should exactly meet when the strip is laid around the wheel. Divide each end into 3 parts, and connect these points with diagonal lines. These lines when wrapped around the wheel will form one continuous spiral.

The length of this strip is equal to 360 degrees, and you can divide it into 360 equal parts if you choose, but for the settings I have given above it is only necessary to divide it into 72 equal spaces of 5 degrees each. You can divide any one of these spaces into 5 parts if your gear setting does not come in multiples of 5.

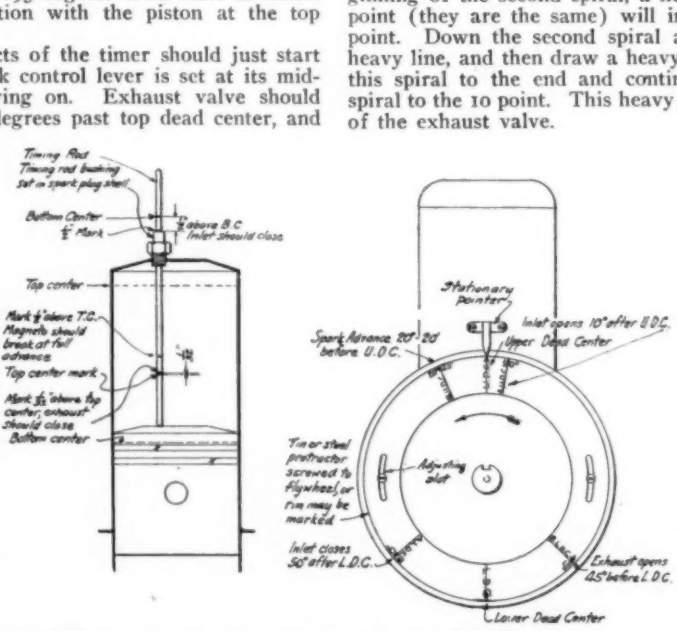

INLET STARTS TO OPEN
INLET COMPLETELY CLOSED
SPARK CENTER
15°
195°
FIRST REV.
SECOND REV.
THIRD REV.
0 30 60 90 120 150 180 210 240 270 300 330 360 0
10°
225°
EXHAUST COMPLETELY CLOSED
EXHAUST STARTS TO OPEN
THIS AND OTHER END COME TOGETHER AT MARK ON FLYWHEEL, AT POINTER, WHEN PISTON IS AT TOP OF STROKE.




*Application of the timing tape designed by L. R. K. to a motor flywheel*

On the first spiral, representing the first revolution, at the 15 point mark a heavy line, and then draw a heavy line down the middle of this spiral until you reach the 210 point. The length of this heavy line represents the action of the inlet valve.

At the ending of the first and beginning of the second spiral, a heavy line at the 0 or 360 point (they are the same) will indicate the timer contact point. Down the second spiral at the 135 point mark a heavy line, and then draw a heavy line down the middle of this spiral to the end and continue it on into the third spiral to the 10 point. This heavy line represents the action of the exhaust valve.


Timing Rod
Timing rod bushing set in spark plug shell
Bottom Center
¼" Mark
¼" above B.C. Inlet should close
Top center
Mark ¼" above T.C. Magneto should break at full advance
Top center mark
Mark ¼" above top center, exhaust should close
Bottom center
Stationary pointer
Inlet opens 10° after U.D.C.
Spark Advance 20° to 30° before U.D.C.
Upper Dead Center
Tin or steel protractor screwed to flywheel, or rim may be marked
Adjusting slot
Inlet closes 50° after L.D.C.
Exhaust opens 25° before L.D.C.
Lower Dead Center

*H. H. P. suggests a novel method by using a rod graduated in suitable intervals*

Select some fixed point adjacent to the flywheel to act as a marker, or pointer. It need not be at the top, in fact, it can be anywhere convenient. Place piston No. 1 at the top dead center and place a line on the flywheel at the pointer and mark it No. 1. Repeat this for all pistons. Now check up these marks. They should be to some even spacing, as crank-shafts are cut 180, 90, 60, etc., but not to some odd degrees, unless you have a special built engine, or the shaft has twisted. It is rather hard to determine the exact top of the stroke, but if you lay the strip around the

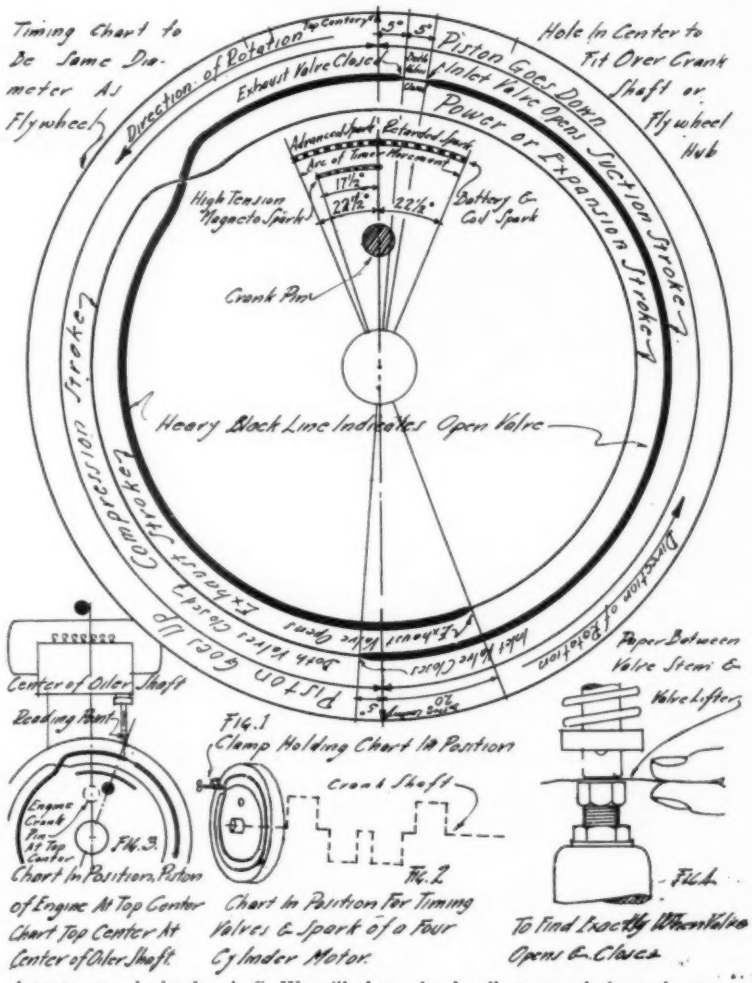
flywheel you can see how close the marks are to some even spacing, and correct it if necessary.

Now lay the strip of paper around the flywheel, holding it with a large rubber band or string, and have the joint occur exactly at the line on the flywheel marked No. 1. Turn the wheel in the proper direction, and when the pointer gets to 15 on the first spiral, the inlet valve should just be ready to start to open, and entirely closed at the 210 mark. Continue on, and at the beginning of the second revolution the timer contact should just start to be made, that is, with the control lever at mid-point. Continuing, at 135 the exhaust valve is ready to start to open, and is entirely closed at 10 in the third revolution. Jumping up from the third to the first spiral, in the next 5 degrees the inlet starts to open, repeating the above operation.

If you set one cylinder, it is probable all the others will be correct, but you can repeat the above operation for all and be sure that it is right. The above completes setting the valves, but the timer needs a little more explanation.

There is a very small lapse of time between making the contact and the passing of the spark. Of course, this is very small, yet in a high-speed engine it will amount to quite a few degrees turning of the flywheel, and if the contact remained where we have placed it above, the spark would not occur until the piston had started down, losing power, so the contact would have to be advanced to bring the spark up to the center. Therefore, we need some movement to the control lever to advance the spark. The position at which the spark occurs will naturally determine the vigor of the explosion. For most efficient operation it will be just before the top dead center is reached. Also when starting, the lever must be moved the opposite direction, so that the contact and spark will both occur after the top dead center, to prevent a back kick. The above is in explanation of placing the control lever at the mid-point while making the foregoing settings.

L.R.K., Phila., Pa.


Timing Chart to Be Same Diameter As Flywheel
Direction of Rotation
Exhaust Valve Closes
Piston Goes Down
Inlet Valve Opens
Power or Expansion Stroke
Hole in Center to Fit Over Crank Shaft or Flywheel Hub
Advanced Spark
Retarded Spark
Arc of Timer Movement
17½°
22½°
22½°
High Tension Magneto Spark
Battery & Coil Spark
Crank Pin
Heavy Black Line Indicates Open Valve
Direction of Rotation
Inlet Valve Closes
Exhaust Valve Opens
Both Valves Closed
Compression Stroke
Exhaust Stroke
PISTON GOES UP
Paper Between Valve Stem & Valve Lifter
Center of Oiler Shaft
Reading Point
Engine Crank Pin At Top Center
Fig. 3
Chart In Position, Piston of Engine At Top Center
Chart Top Center At Center of Oiler Shaft
Fig. 1
Clamp Holding Chart In Position
Crank Shaft
Fig. 2
Chart In Position For Timing Valves & Spark of a Four Cylinder Motor.
Fig. 4
To Find Exactly When Valve Opens & Closes

*A protractor device by A. G. W. will show clearly all stages of the cycle at any point in the revolution*

## *The Timing Rod Method*

THERE are two methods in general use of timing a gasoline engine—by timing rod and piston travel and by flywheel protractor. The first is the simpler, but the second the more accurate. In the sketches shown, the piston travel and crankshaft angles are taken from the timing data on certain airplane engines, and while the setting would differ on marine engines—in fact, is slightly different for every make of engine—the principle used is exactly the same, irrespective of the type or size.

Before attempting to time any engine, the proper valve and ignition setting must be obtained from the makers; then the contact breakers and valve tappet clearances adjusted and set correctly. A common method of obtaining the point at which the magneto or other ignition apparatus fires is to force the contact breaker points apart and place a sheet of cigarette paper, which is about 0.003 inches thick, between; then turn over the engine until the paper can be just withdrawn without tearing, at which time the spark is assumed to jump. Similarly, in timing the valves a cigarette paper is placed between valve stem and tappet and the valve is assumed to have just seated, when the paper may be withdrawn, provided the tappet clearance has been correctly set.

We will first consider the timing rod method. Here a rod is pushed into the cylinder, vertically, through the spark plug or other opening and preferably through a special bushing to hold it accurately in position until it touches the top of the piston. As the piston moves up and down the rod follows suit and the top and bottom center positions are marked on the rod where it enters the bushing or at some other convenient point. The valves will open and close at certain points in the piston travel, and as the rod follows the piston these points may be marked thereon and the valves set as these graduations reach the datum level. It is usual, where all cams are fixed on the camshaft, to set the camshaft by the closing of the exhaust valve, this point requiring to be more accurately located than any other. If this point is accurately obtained and the others do not check up, if the tappets are set correctly it is a sign that the camshaft is bent or the cams worn and thrown out of time. The amount of spark advance and retard being known, the magneto or other ignition apparatus can also be set by the timing rod by having the break occur (using the cigarette paper) at certain points of the piston travel.

In the sketch, for instance, in this particular engine the exhaust valve should close when the piston has moved down exactly a thirty-second of an inch from top center, as determined by the graduations on the rod. That means that when the rod has moved down a thirty-second of an inch from the top center mark, that the exhaust valve should be just closing; that is, if a cigarette paper had previously been inserted between valve stem and tappet, one should be just able to withdraw it at this point. Similarly, the magneto breaker points should just separate when the timing rod has moved down a half inch from the top

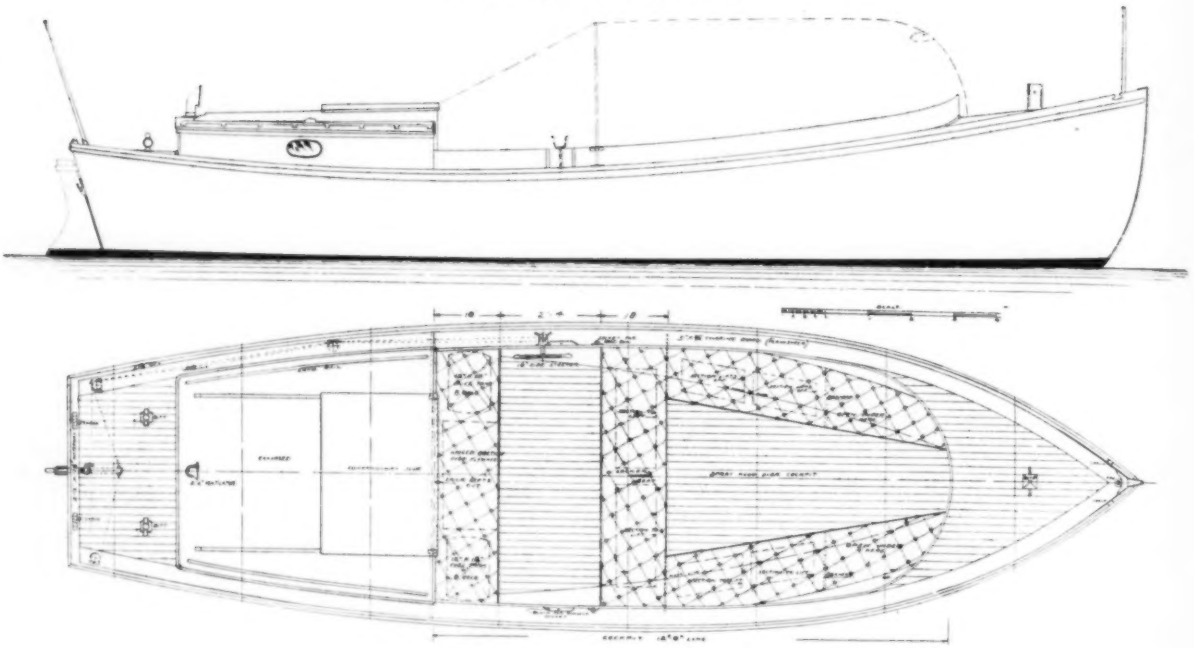
(*Continued on page 64*)

# Shrimp, a 25-Foot Hampton Boat

## An Easy-to-Build, Moderate Speed, Open Boat Which Is a Development of the Popular New England Dory and Fishing Boat Types

*Designed by William J. Deed*

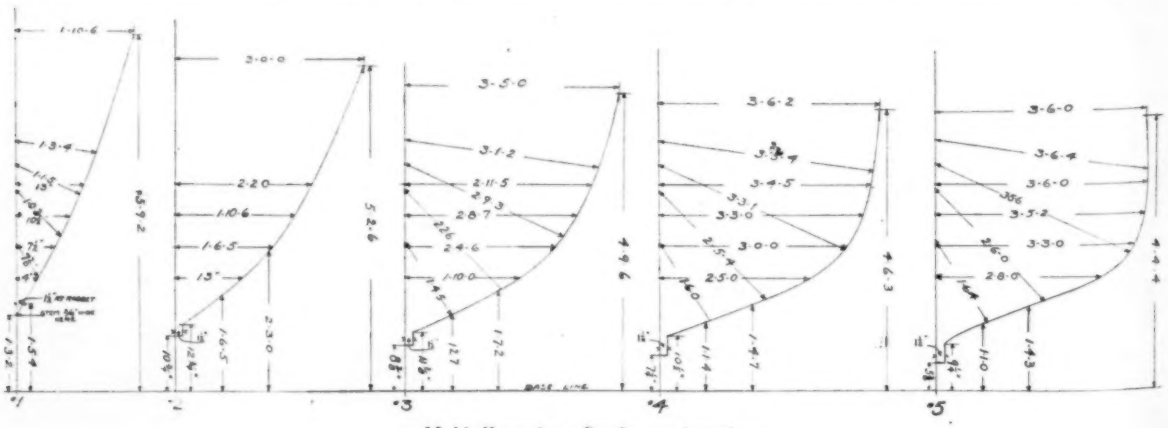
Exclusively for MoToR BoatinG



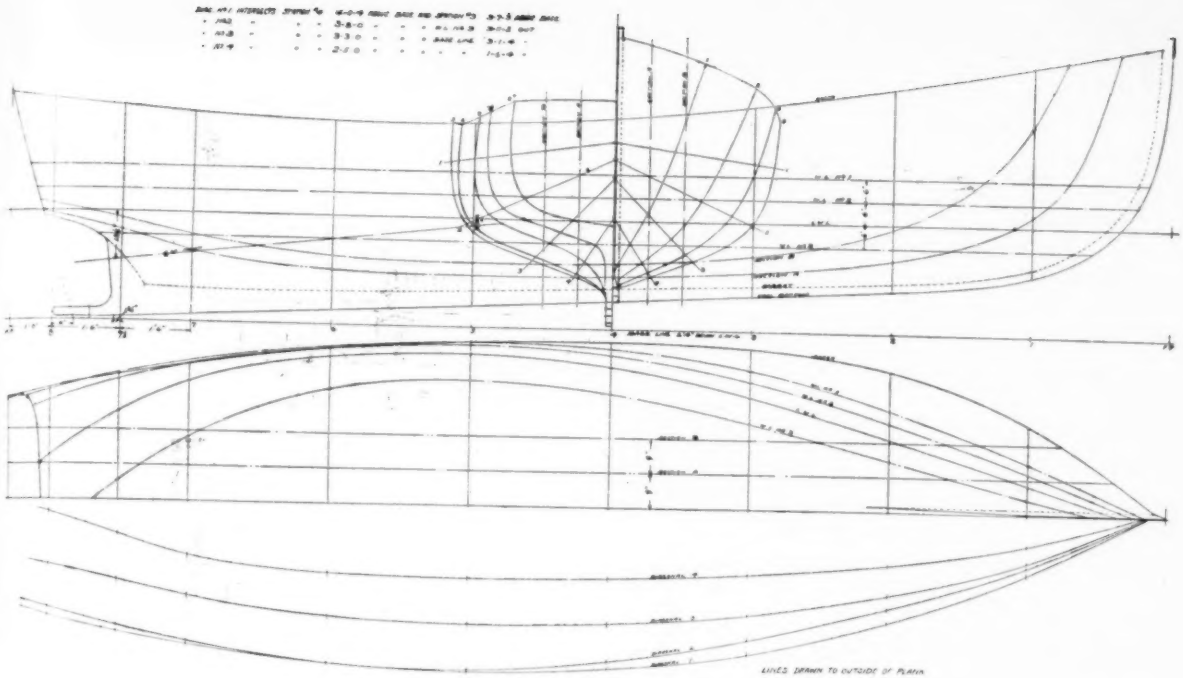
*Outboard profile and arrangement plan of Shrimp*

HERE is a craft, which should have a variety of uses. She is not a speed demon, nor a fast runabout, neither is she a tub. She'll take you out on a fishing trip when the sky is gray and the wind and sea both very active and she'll bring you back; she is seaworthy. Of moderate speed, good carrying capacity, wholesome appearance, and sturdy construction Shrimp will afford all the fun you can crowd into a season. She will tote your guests and all the bags and bundles they can bring along from the steamer or railroad connection down the bay to your summer home. When you want to show off the beauties of the shore round the Cape you can pile your family, guests, the kids and the dog aboard and there'll be room; this isn't a 25-foot runabout seating six with half the length utilized by deck you can't use. This is all boat. She would make a good tender for a small yacht club; she could prove very useful delivering goods or towing scows or rafts or as a ferry between shore and a steamer in the harbor.

She is something like a Hampton boat, something like the lobster and fishing craft of the New England coast, something like a power dory in arrangement, and something like many pleasure boats. She is a development from several designs by the author of craft for all these uses, many of which were found to be exceptionally seaworthy in use on the rough Canadian coast 'way down East, so MoToR BoatinG readers may feel certain that if they build a Shrimp that they will have a successful little ship. She is quite beamy, 7 feet, which affords plenty of comfort, steadiness, stability, and liberal deadrise which makes for an easily driven hull in spite of the liberal beam.



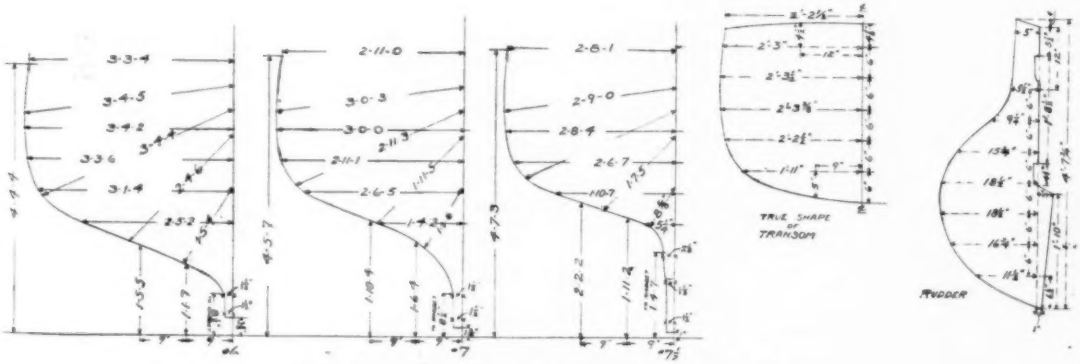
*Mold dimensions for forward stations*



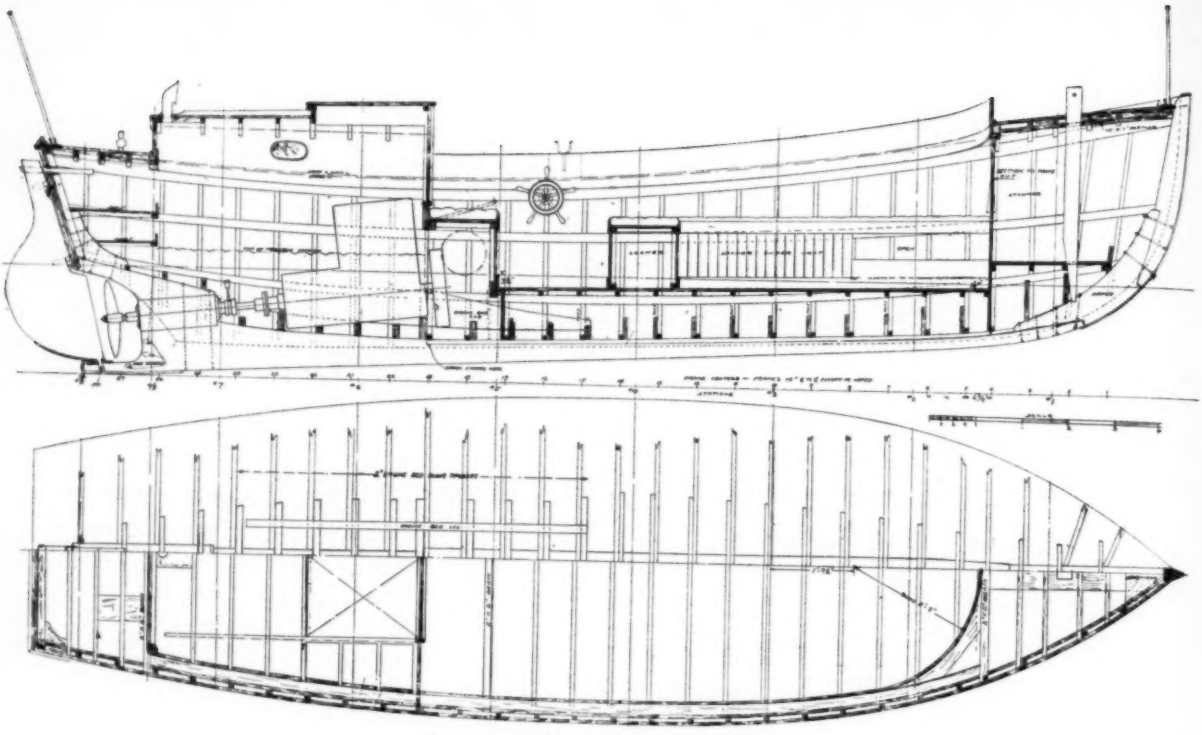
*Complete lines in profile and plan for Shrimp*

There is no reverse curve to the forward frames to bother the amateur builder, but in order to place the engine way aft and allow a large cockpit as required in such a boat it is necessary to have a reverse curve at the heel of the frames aft. Space is provided for any suitable engine and we would call a suitable motor one of 10 to 15 h.p. of medium speed, driving this craft at 8 to 10 m.p.h. Run the exhaust out at the stern. The slide over the motor has been made wide so as to allow maximum space to get into the little cabin over the motor. This is simply a shelter for the motor and equipment, not being intended for a regular cabin, but in view of the fact that many young fellows are making short cruises in their open boats we have indicated a couple of pipe berths which can be fitted in that cabin, as well as transoms and shelves. There is a bulkhead just forward of the motor which will separate any gasoline, oil, grease, etc., from the forward half of the bilges. Over the flywheel is a large hinged section of the seat so that the motor can be turned over, and the reverse lever, or the lever for controlling the reversible propeller, if either are fitted, should be brought to a point inside the cabin door where the boat operator can readily reach it. Controls for the motor should also be handy. A side steerer is provided. The two 8-gallon fuel tanks are under the seat on each side, short feed lines being required. A thwartship seat with side seats extending forward of that provide seating capacity sufficient for quite a few persons. The cockpit is 12 feet long. Over the cockpit can be fitted a waterproof spray hood of either the type that folds lying around the forward end of the coaming or the type which has a bow frame and slides from one side at the coaming over the bow to the other coaming. From the aft end of the spray hood an apron extends to the forward end of the house and buttons along the coaming too, so that the boat can be enclosed when leaving her at the mooring. The space at the forward end of the forward seats has been left open for the stowage of bulky items of equipment.

Shrimp should not offer much to bother you in building her; the item most likely to take time and thought is the reverse curve in the frames and planking aft, but like everything else in this world, it can be done by planning. Don't try to steam bend short stock on quick bends; use long stock with plenty of length to spare on each end, then the hard turn in the bend coming near the middle rather than near the end of the piece will be done easier. It also helps to take the saw and run a cut down the frame from the heel far enough to take the hard turn, then nailing the frame together after it has been bent; this would help in bending in the frames in the vicinity of stations 7 and 7½, Run the saw cut parallel with the planking. If you do find it too hard to bend in the three or four frames there that have quick bends then cut out the shape near the heel (bottom) of the frames and then lap the frame above the




*Mold dimensions for after stations with rudder details*



*Construction plan and profile for Shrimp*

quick turn onto the sawed lower section. But try to steam them in; it can be done by steaming them well, bending them carefully and makes a neater job. The frames that extend from sheer to sheer amidships should be well steamed, then pushed down onto the keel, having the middle of the frame there and with plenty to spare at the ends. Fasten and clamp down the frame where it crosses the keel and then force the frame down to the ribbands and clamp them there. By carefully bending a well steamed rib it would surprise one what bends it will make, but it must be done gently and firmly.

In planking the only place to bother you is that hollow aft, but by laying off the widths of plank strakes as we instructed in the February issue and then using strakes of half that width where the hollow comes the narrow planks will fit in the hollow and if well steamed no trouble will occur. The whole operation is similar to that described in the February issue as building boats follows the same procedure in almost all cases. In bending in the forward radius of the coaming make that forward section about 10 feet long at least and that will bring the ends well back from the curve onto the straighter part of the curve. Fasten the ends there to a block about 7 inches long by ¾ inch thick.

The cost of such a boat as Shrimp would be under $1,000 for a home job, very much less if you installed a rebuilt motor. She will provide a million dollars worth of fun, health and recreation.

Arrangements have been made whereby those desiring full scale blue prints of the drawings for Chum, Nomad, Porpoise or Shrimp can secure them at nominal cost by addressing F. W. Horenburger, 63 West 184th Street, New York City, N. Y.

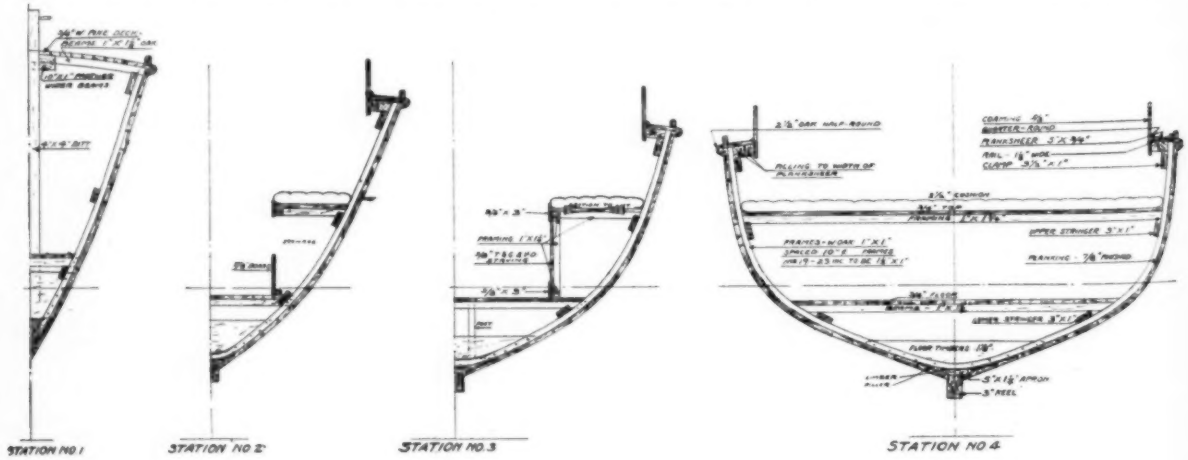
Shrimp should be built to the following specifications.

## Complete Specifications for Shrimp

WILLIAM J. DEED, *Naval Architect*

### *In General*

It is the intent of these specifications to cover the construction and equipment (with the exception of motor, shaft, stuffing box, stern bearing, motor exhaust and equipment, propeller, and the




*Forward construction sections of Shrimp*

work of installing the motor) of an open launch of the following dimensions:

Length over all 25 feet, breadth 7 feet 1 inch, draft 2 feet 4 inches.

It is understood that, whether or not described in these specifications, all items of equipment, either shown on plans or called for in these specifications, or called for by the U. S. Inspection Regulations, or manifestly necessary to carrying out the intent of these specifications, shall be done or furnished by the boat builder as a part of the contract. The boat shall be kept fully covered by insurance during construction. Boat shall be built under cover.

*Material and Workmanship*

All material and workmanship must be first class and all material or workmanship found defective shall be removed and made good at the builder's expense.

*Hull*

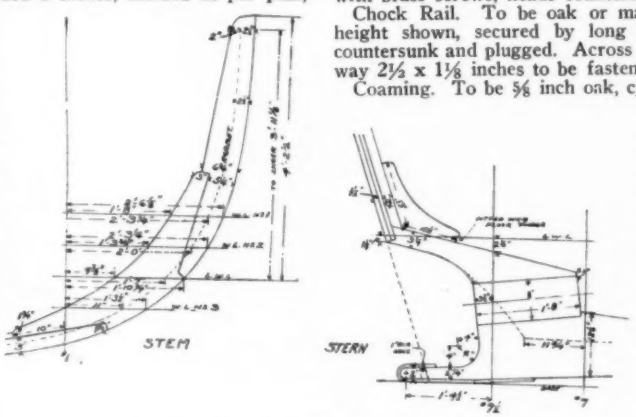
Keel. To be white oak sided 3 inches, molded as per plan, to be rabbeted for planking, aft end to take heel of rudder and to be tapered around opening at propeller.

Stem. To be white oak sided 3 inches, molded as per plan, rabbeted for planking, to be reinforced by 3-inch oak apron securely fastened to stem and keel by ⅜ inch diameter galvanized iron rod riveted each end over rings.

Apron or Keel Batten. To be white oak sided 5 inches, molded 1¼ inches, secured by floor timber fastenings. To be beveled on under side as necessary.

Shaft Log. To be white oak sided 4¼ inches, molded 8 inches, secured by ⅜ inch diameter galvanized iron rod riveted each side of shaft hole. Upper and lower edges to be reduced to 3 inch siding.

Horn Timber (Fashion Piece). To be white oak sided 3 inches, molded as per plan, secured to keel and shaft log as shown.




*Details of stem and deadwood at stern*

Transom. Framing around edges, at center line and across top of transom to be 1⅛ x 1¾ inches. Transom to be two thicknesses of ¾ inch cedar, pine, or oak laid together with thick coating of white lead. Outer seams caulked and puttied.

Frames. To be of white oak sided 1 inch, molded 1 inch, steam bent, spaced 10 inches on centers except as noted. Bow frames to spring normal to planking at heads so as to reduce amount of beveling.

Planking. Garboard and sheer strake to be white oak or yellow pine. Balance to be white cedar. All planking to finish ⅞ inch. To be laid smooth planked in narrow strakes, with tight seams lightly caulked with yacht cotton, payed with paint, and filled flush with white lead putty or seam composition. Lower edges of garboard and hood ends of planking to be fastened with 1⅛ inches No. 8 brass screws, heads countersunk and wood plugged. Balance of planking to be fastened with copper wire nails riveted over burrs, two fastenings in each plank except three rivets in sheer strake and two rivets in addition to one screw in garboard strake. Planking to be joinered smooth and sanded before painting.

Floor Timbers. To be of oak 1⅛ inches thick secured to keel by ⅜ inch galvanized iron rod. Limber to be cut in each floor timber in line fore and aft on each side of boat.

Floor timbers in way of engine at frames 15-24 2 inches thick.

Rudder. To be of white oak 1⅛ inches thick, secured to transom by brass rudder strap braces and supported at keel by ¾ inch diameter brass pin. Bottom of rudder to be protected by ¼ x 1⅛ inch brass. Pin to be held by cotter pin.

Clamp. To be yellow pine 3½ x 1 inches secured to frames by heavy galvanized nail riveted over ring each end and galvanized boat nail, one of each at each frame.

Stringers. To be yellow pine 3 x 1 inches secured as Clamp. Stringers to lie horizontally as far as possible to take seats as shown.

Floor Beams. To be oak 1 x 1¾ inches, spaced as shown, ends fastened to frames. Supported every other beam alternately port and starboard of center by 1 x 1¾ inch posts.

Floor. To be ¾ inch pine. Center boards to width of 12 inches to be cleated together so as to be lifted out for inspection of bilge.

Deck Beams and Framing. To be white oak 1 x 1⅛ inches. Heavy beams as noted 2 x 2 inches. Between coaming and frames filling to be fitted as indicated. Fashion pieces at forward end of cockpit coaming.

Deck. To be ¾ inch white pine, seams caulked, payed, and filled with seam composition.

Planksheer. To be oak or mahogany 5 x ¾ inches secured with brass screws, heads countersunk and plugged.

Chock Rail. To be oak or mahogany 1⅛ inches thick, of height shown, secured by long screws or boat nails, heads countersunk and plugged. Across stern oak or mahogany waterway 2½ x 1⅛ inches to be fastened.

Coaming. To be ⅝ inch oak, cypress, or mahogany board of width shown steam bent and secured by ⅜ inch dia. galvanized iron rods through filling and frame at every sixth frame, at all other points spaced 12 inches to be fastened by long brass screw, head countersunk and plugged. Top to be rounded off. Forward piece of coaming to be about 10 feet long, ends to be fastened to oak, cypress, or mahogany blocks secured to after sections of coaming on each side. Block to be fitted for rowlock socket.

Sheer Ribband: To be 2½ inch oak half-round, secured by long screws with heads countersunk and plugged with hard wood plugs.

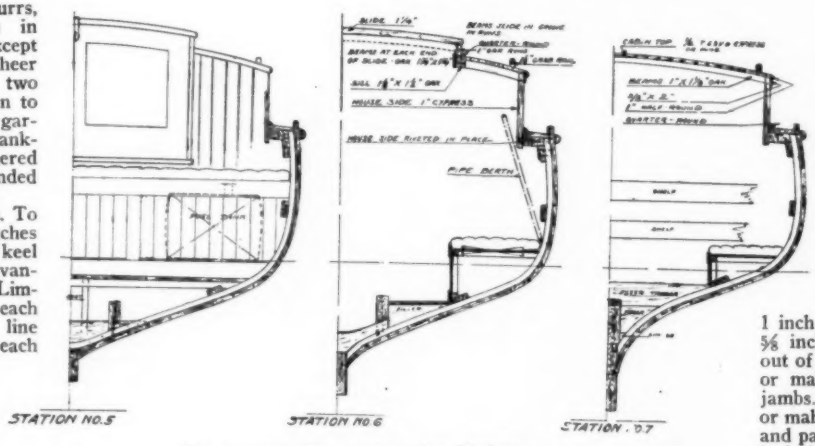
Trunk over Engine: To be constructed to outlines shown. House or trunk side to be 1 inch cypress fastened to filling and frame at every other frame by ⅜ inch dia. galvanized rod riveted. Midway between rivets long screws to be used with heads countersunk and plugged. Quarter-round to be secured at deck and house side.

Beams to be oak 1 x 1⅛ inches crowned and spaced as per plan. Notches to be cut in trunk sides to take beams. Ends of beams covered outside by ⅜ x 2 inch oak or mahogany piece and oak or mahogany 1 inch half-round.

Top to be ½ inch tongued, grooved and V-d cypress or pine covered with canvas laid in thick wet paint, edges turned down over trunk side under ⅜ inch finish piece and fastened by tacks. Edges turned up at companionway under ⅜ inch finish piece around opening.

Oak or mahogany grab rail 1⅛ inch wide to be secured on house top.

Companionway sill oak 1⅛ x 1½ inches. Runs to be 1 inch and these to be grooved for ends of beams at each end of companionway slide to run in. Slide to be 1¼ inch oak or mahogany well fastened together. Beams at each end to be oak 1¼ x 1¼ inches. Door to be 1 inch oak or mahogany with ⅝ inch panels. Door to lift out of groove in 1¼ inch oak or mahogany door casing or jambs. Door sill to be oak or mahogany 1⅛ inches. Hasp and padlock to be provided to lock door. (*Cont. on page* 106)




*After construction sections for Shrimp*

# That Genial Chesapeake

## The College Professor and His Wife Take a Cruise. The Open Sea and Inland Waters Both Have Their Charms for Them

*By Mrs. Ezra Bowen*

Illustrated by A. E. Snyder

*"Why, Kate," the Professor had said, "you can sail right up and tie your boat to a tree and go along and find a farm-house, and they'll call you 'honey', and sell you milk and eggs for almost nothing——"*

**Here is a cruise story which everyone should read. If it doesn't make you decide to speed up this month's fitting out work and cause you to get out your charts on the spot and decide definitely where and when next summer's cruise will be held—well, then there's something wrong with your health. You need a vacation. We can't all be college professors and have all summer off for cruising, yet any motor boatman can get in a whole lot in a two weeks' vacation if he will.—Editor.**

"KATE," said the captain, "college professors can't afford to own boats."

The captain would not have said this, because he was a college professor himself, but that it was a dark day in February, and he was very far from salt water.

The summer before, we two, as captain and crew, had sailed down the coast from Portland, Maine, to Philadelphia, in a thirty-six-foot yawl,—a deep, beamy, heavy-timbered Gloucesterman with an auxiliary engine which we regarded with awe, and never used except in canals. There she always caused us much agony by balking at drawbridges, snorting and gasping and coming to a full stop just as the draw began to swing open,—two trolley cars waiting at one end of the bridge and six automobiles at the other. In these breathless moments, as I sat at the wheel, exposed to the scorn of loiterers on the bridge, when automobiles' Klaxons began to shriek and the gatekeeper to hurl words at us, a hatred of gasoline engines and of inland waters would rise in me, and I would swear never to furl sails and be a motor boat person.

We had planned originally, when we brought *C. D. B.* over those miles of cold Atlantic water from Maine to the Delaware, to have our next summer in Chesapeake Bay; to do our own repairs at the shipyard in June, and then to sail south down the river from Essington, spend one night in the lock basin at Delaware City, and next day to make our way through the canal to Chesapeake City, and thence to that Cruiser's Paradise of which the captain had told me stories ever since I had known him. Stories of warm waters and warm winds, of green banks sloping down to the water's edge; little bayous and hospitable coves where we could make our nightly anchorage.

"Why, Kate," the professor had said, "you can sail right up and tie your boat to a tree and go along and find a farm-house and they'll call you 'honey', and sell you milk and eggs for almost nothing——"

But, as I say, this was a dark, cold day in February. Came a darker day, when somebody offered us a price for our boat, and we sold her.

And then late in March those canny gentlemen, styled ship brokers, who have their offices on Broadway, began to work upon our souls. Envelopes arrived, containing ten or twelve sheets, each descriptive of a boat for sale, with a photograph of said boat pinned to the top of the page,—and each was more alluring than the last, each one seemed more our boat. We discussed their respective merits coldly, cautiously, trying to appear abstract—mere observers—window shoppers. The captain courageously ended every such discussion with a hearty, "Well, we certainly did right to sell *C. D. B.!*" which became less hearty every week, and finally petered out into, "Well, I guess that fellow certainly will enjoy *C. D. B.* this summer. Wonder where he'll take her? If he goes down Chesapeake way he'll have to be careful with that deep keel——"

One morning the captain came in excitedly tearing open a long blue envelope. He waved a paper; lines of type and long hand greeted me,—familiar words and figures.

"Here it is!" shouted the captain.

"Here's what?" asked the crew, calmly pouring out the captain's coffee.

"Why—why—well, Kate, I sent for this one," said the captain with an air half of guilt and half of bravado. "She'll be just right for poking around the Chesapeake. Shallow draft, but she's shippy, too; we could go anywhere in her. Look, here's your old stove and there's my engine aft, and you can have no end of locker room. We can rip out that partition and put in——"

"Captain," said the crew slowly, "I think a college professor can't afford not to own a boat."

* * * * *

"Vanilla an' chawclit. Yas'm, Miss, I take chawclit myself ginrally. Thirty cents a pint, Miss;—you ain't got no spoons? That's all right; jest you take two uh these yeah along with you. Tied up down by Jim Henry's? That yoh husband out there, Miss?—Why yas'm," with a slow smile, "I remember you. Laid in heah in the basin one night las' summer with a yawl, didn't you? Goin' through in the mo'nin'? Pretty along the canal, Miss; you'll like that. . . . Oh, reckon 'bout thirteen miles to Chesapeake City—ain't it, Joe?" To a short-sleeved youth of an enviable rotundity who was seated in the corner behind one of the teetery serving tables, consuming with much relish something pink and watery out of a tall glass.

"Yas'm, reckon likely 'bout thirteen miles," says Joe slowly.

*And then late in March those canny gentlemen, styled ship brokers, who have their offices on Broadway, began to work upon our souls*

A pause, sounds which proved unmistakably that the last drops of the pink liquid were traveling from Joe's glass up Joe's straw to Joe's mouth.

"Reckon maybe thirteen miles an' a haff," sighs Joe.

"Good evenin', Miss. . . . Oh, no, you nev' min' 'bout them spoons; jes' bring them 'long back any time. Evenin'."

I hurried out of the store with my pint of chawclit in my hand, and looked up and down the Main Street of Delaware City for my husband,—Captain Ezra Bowen, skipper of the good ship *C. D. B. II.* Yes, we had succumbed, we were motor boat people now. To the casual observer our craft looked exactly like the one thousand and one other small gasoline cruisers which thrive upon the waters of the Sound and the Delaware River, and which flock every Saturday afternoon, from July to September, into Lloyd's Harbor—Atlantic City—Annapolis. Pleasure boats, the fishermen call them.

But to us she was not merely Yacht *C. D. B. II*, gasoline cruiser No. 2247a; she was *Home!* We had caulked her seams and sanded her and painted her. Those two weeks at Dickman's Yard in Red Bank had been well spent. We had ripped up her cabin roof to put in head room; followed two squally, rainy nights when no amount of slickers and old pieces of canvas could cover all the cracks where the drops oozed in and ran from the canvasless roof onto my bunk in three, four, five, six little streams more monotonous and devastating than any Chinese water torture. Tin cups, placed at intervals on the floor and bunks, failed,—and failed with damning accuracy,—to catch the drops. Much futile adjusting of cups on my part, a tinny sound from the other berth as the captain knocked one of his cups onto the floor. A sleepy voice,——

"What's the matter with you, anyway, Kate? . . . It's coming down on your feet? Well—*pull your feet in!*"

Silence, dripping noises; I writhe into a position like the letter Z, observing silently but triumphantly that I have eluded all five streams.

And then our two weeks of repairing were over, and the last lick of paint was dry upon the garvey built by the captain as a tender. That garvey! It was to cause more comment than our cruiser and ourselves put together. It had taken the captain two days to build her; he had laid out the lumber in the yard near the shop, and gone to work silently to puzzle her out and piece her together, the crew standing by to give amateur assistance such as handing him nails or kneeling on something to hold it in place. Among the numerous spectators who had surrounded us during the entire performance, seemingly much amused at the captain's unconventional way of building a boat, was Dickman's right-hand man and expert caulker, the Swede. He was the most shiftless and happy-go-lucky seaman that ever wielded caulking iron, but he knew his job. When we finally floated the garvey he was on hand. With a shake of his head he confessed that she was "Fine leetle boat; when you start to build I t'ink, 'W'at he make here—flower pot?'"

She was 12 feet by 2 feet 9 and light as a canoe; and her old-fashioned oaken rowlocks puzzled everyone. Passers-by in rowboats would stop to look her over.

"Say, look at that dandy little boat!" said one boy to his companion.

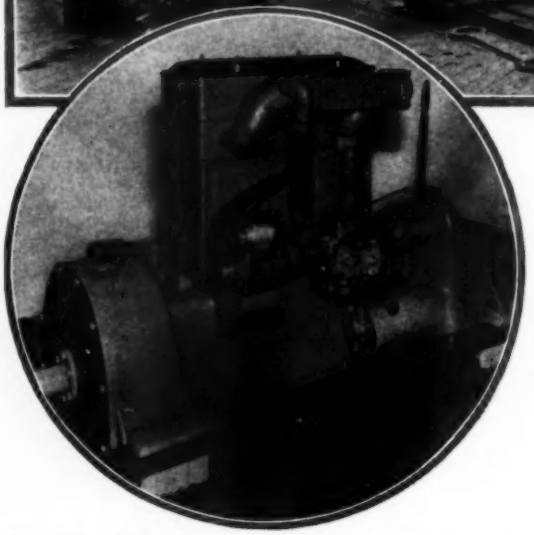
"Aw, that's a self-made boat," was the scornful rejoinder.

But we tied that self-made garvey to our stern and we chugged out the Shrewsbury River and around Sandy Hook onto those wide waters which rose and sank with a swell which seemed mountains higher than it had from the solid decks of our Gloucesterman the summer before. The Jersey Coast—Asbury Park, Point Pleasant, Barnegat, Ocean City—white and flat and treeless; houses on stilts which looked as though they had run down to the beach to stare impertinently at us. And then the gray, featureless expanses of Delaware Bay.

Between the Cape May rips and the first channel buoy on the river there stretch fifty miles which to the small-

(*Continued on page* 104)

*The testing laboratory showing 20 h.p. Knox motor, dynamometer and other testing apparatus*



*The Knox 20 h.p. Marine motor an up to date engine in every particular*

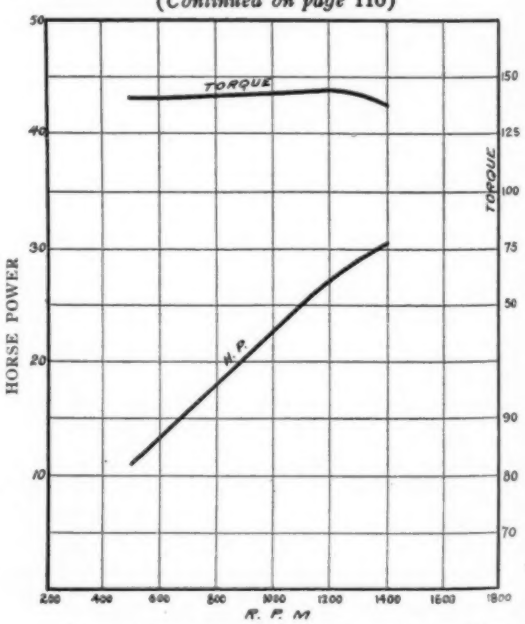
# Knox Motors Show Up Better Than Claims

## The Manufacturers at Springfield, Mass., Turn Over Their Testing Laboratories to Disinterested Parties for Purpose of Tests on the New 20 h.p. Knox Motor

KNOX motors, manufactured by the Knox Motors Associates of Springfield, Mass., have made good in their trials and brake horsepower tests. We know for we were invited to go up to their factory at Springfield and conduct the tests ourselves. When we reached the testing laboratory we were greeted by Chief Engineer Gurney, Assistant Chief Engineer Stone and Sales Manager Manning of the Knox Company with the salutation, pointing to the new Knox 20 horsepower marine motor on the test stand, "There she is, break her up if you can, put her through any paces you want."

First we looked over the model on the test block and some of the assembly parts near by. This is what we saw—a model that in outward appearance looked up to date in every particular, all moving parts enclosed, self-starting and lighting generators built in, provision for an extra wide engine bed in the boat which could extend well forward and aft of the engine itself without being cut or weakened in any way, a very neat, novel and practical method of attaching the motor to the bed in the boat by means of hangers, reverse gear built in, an internal system of pressure feed oiling system, which can not fail to work and big and husky enough to take care of every moving part and have some to spare, provision for oiling every bearing, gear, shaft and all friction surfaces. There were four cylinders 3½ x 5 inches with valves in head and all valve mechanism enclosed, a removable head, a water cooled manifold, two water pumps, one for the jacket and one for the bilge that pump a stream big enough to use for washing down decks before colors in the morning, a high tension magneto and impulse starter, in addition to the self-starter, a one-piece camshaft and a large drop-forged crankshaft which was balanced to perfection. The engine base was an aluminum alloy so designed as to permit almost perfect core work in the moulding and casting. All parts seemed to be easily accessible and the provision which had been made for easy adjustment was remarkable.

(*Continued on page* 110)




*Curve showing horsepower and torque at various revolutions. Test made March* 4, 1921

# Now Is the Time to Buy

## Prices of Boats, Engines and Marine Accessories Are Just and Fair — Reasons by Prominent Members of the Industry Why Reductions In Prices Are Not Probable

**A GREAT deal of publicity has lately appeared in the press on the subject of reduction in wages. The daily papers have also been calling attention to the scarcity of orders and the general closing down of manufacturing plants all over the country. While some of this may be true, yet it is not the whole truth.**

**There is no scarcity of orders in the motor boat field, men are not being discharged. Many concerns report more orders and more men at work than ever before.**

**There is a demand for boats and engines today. But there is a certain amount of hesitancy on the part of the public to buy now, as judging from other fields they believe that a big reduction in the selling prices of engines and boats is due. But they are wrong, for there will be no nation-wide reduction in these nor can there be any.**

**Prices were not boosted a year or so ago as in many other lines, therefore there can be no reduction in them. Marine motors and boats as they are built today are built better than ever before. Building them better costs much more money. We believe the public wants even better boats and engines and are willing to pay for this improved quality.**

**To convince our readers that a reduction in prices at this time or even in the near future is not to be expected, we have asked a few of the authorities in this field to give you some inside information and to tell of the conditions as they exist in their own plants. We hope everyone will read what they have to say.—EDITOR.**

By WALTER L. FAY

*President*
*Fay & Bowen Engine Co.*

I BELIEVE that the attitude of most of the engine manufacturers is similar to that of the United States Steel Corporation. We have not profiteered and our present selling prices yield only a slight margin, based on actual costs. We have been unable, for this season's output, to get reductions in either labor or material which would warrant any appreciable reduction in the selling price of engines.

If the prices of engines had been boomed like that of many other articles or if the prices of labor and of material entering into our line had appreciably shrunk within the past ninety days even, there might be some justice in claiming that engine manufacturers should take their loss.

This Company believes that it is not yet time to institute a drastic payroll cut and that our policy of maintaining reasonable prices is the proper one to pursue until the whole situation settles.

By LOUIS J. HALL

*President, Columbian Bronze Corp.*

FROM our viewpoint the key to the whole situation is the cost of labor. In many industries wages have been forced down regardless of living costs, and if everybody did that, of course living costs would come down. Our information is, however, that living costs have not been materially reduced, and we have not been willing to arbitrarily reduce wages until living conditions are easier. By wages we refer not only to the producer in the shop, but to foremen, department heads and our clerical force.

By HENRY P. HELMUTH

*Sales Manager, Scripps Motor Co.*

THE position in the marine motor industry is a bit simpler than in other directions for the well known reason that the increases in prices compared with those in force prior to the outbreak of the war have been most moderate, hence any possible reduction that might come later must be equally moderate.

Delay on the part of those who have intention of ordering marine motors or boats, but who are waiting until low prices have been reached, is hardly warranted at this time. It is rather late in the season and any engine manufacturer who hopes to make deliveries this coming year either has contracted for his material, has it on the way or has it in stock.

The period between now and the active opening of navigation is mighty short, and if the present season is to be utilized, absolutely nothing can be gained by holding off, other than disappointment, both as to delivery and any possible reduction in price.

Anyone in the trade analyzing our figures will agree with us heartily in that they are competitive. We know our costs and know that our margin of profit is very modest,—lower, in fact, than it should be, but we are content to do our share in the general stabilizing process that has been going on in business for some months past.

We have been manufacturing, as you were informed some time ago, on a rather ambitious scale all during the so-called dull period, so that we have been able to maintain our overhead at a low figure.

This is one item in cost that the public does not very often consider. Should there be any marked curtailment in production on the part of industry in general, overhead may perhaps assume proportions that would more than offset any further material reduction.

As a general proposition, we hardly see where a buyer can gain by holding off further—things are pretty well shaken down now, and where selling prices are based on cost plus a reasonable profit, the buyer is obtaining the full purchase value of every dollar he spends—we know this to be the case at least in our own product.

By C. A. CRIQUI

*President, Sterling Engine Co.*

IN our particular case we feel that it can be easily explained. In October, 1919, we made an advance in the prices of our motors of about 7 per cent. This advance of 7 per cent was on a price that had been fixed for a considerable period previous to that time. The advance in materials and labor in October, 1919, was far in excess of 7 per cent which we raised. From that date on costs kept on climbing. Labor advanced from October, 1919, 23 per cent; castings—cylinder and base—advanced 34½ per cent and other castings have advanced in equal proportion; accessories all along the line also advanced far in excess of 7 per cent that we added.

It was a serious problem as to what would be the better policy at that time—whether to advance the prices of our motors or whether to attempt to pull through the year and take our losses and maintain our organization. To advance the prices would have thrown the hardships equally on our distributors, boat builders and the general public. The buying public were already burdened with the 10 per cent luxury tax on new boats. This already was giving the boat builder a tremendous handicap in getting new business. Our final decision was to carry through without raising the prices above the 7 per cent. This has enabled us to keep our employees going; it has enabled us to help our distributors and the boat builders and we hope that our action had been appreciated by them and that their consideration of what we have done will create a feeling of appreciation for our co-operation. It surely must have helped them some.

From a financial point of view our company was a big loser and it would be absolutely impossible for us to continue for a much longer period without raising the price in proportion to costs that have been raised to us.

Materials have dropped some in price; labor has made a slight drop, but only slight. We have thoroughly gone over

the entire situation of costs of production and purchase prices. From the high peak to which the costs had gone, we cannot in any way figure or estimate where it has come back or will come back to the time we made the 7 per cent

Then again, we have added to our GR model motors many additional refinements and developments which have added to the general cost without changing the present list price. If we had advanced our prices about 33 per cent, it would have been in keeping with what other costs advanced, and that would have permitted us to reduce our prices now, which would undoubtedly meet with a great deal of favorable comment. We did not advance, so we cannot reduce.

The problem of how to present it to the buying public has been in my mind for some time—present it so that they could thoroughly understand it and would buy with the confidence that they were not buying at exorbitant prices.

By C. G. AMORY

*Treasurer, Consolidated Shipbuilding Corp.*

THERE is certainly a demand at this time for yachts and motor boats, but buyers, however, do not seem willing to go ahead. In my opinion it is not so much the price or the uncertain financial condition of the country as it is the feeling that they should hesitate and wait another season for a fall in prices. This feeling has been created partly by the press in their optimistic editorials of general decreases in labor rates, and through our own trade. I have actually known of a case in which a boat builder has made statements to a prospective buyer advising him to wait for another season, when according to the builder he could cut the present prices in half. This attitude on the part of our trade is, I feel sure, just what we should all aim to prevent.

As a matter of fact, there has already been a small wage cut in the boat building business. From present indications it would seem that any further cut might cause labor disturbances. However, even these reductions in labor costs could not possibly bring boat or engine costs down to anything like the cost three or four years ago. The general attitude of the public seems to be that costs will suddenly drop to a pre-war basis. This we know is impossible. Boat and engine prices never went up in proportion to the increased costs of labor and material. The boat industry particularly, were forced to cut their selling prices practically to the actual shop costs so as to be able to stay in business. The public would not pay the prevailing prices based on former profits. As a result, the builders were compelled to include in their profits the 10 per cent War Tax. In other words, I am of the opinion that the Government were collecting the 10 per cent War Tax not from the buyers, but out of the profits rightly belonging to the builders.

It would, therefore, seem reasonable to state that boat and engine selling prices cannot be materially reduced. If buyers continue putting off placing their orders, it will result in the breaking up of the building forces in the plants of the different manufacturers, which will eventually force prices up instead of down.

I congratulate MoToR BoatinG on their effort to stimulate buying. Their efforts are based on good common sense principles, and if the trade will co-operate with MoToR BoatinG in this manner, I feel sure much good will come of it.

By WILLIAM E. GIBB

*Vice President, Frisbie Motor Co.*

FOR the purpose of comparison I will limit my remarks to the time running from 1917, through, and including the year 1920. This is what we generally refer to as the War period, and is that time in which increases in price took place in other lines of business.

In manufacturing our Frisbie Motors, we purchase our castings from the foundries, our forgings from several different forgers, and completed accessories such as Reverse Gears, Ignition Devices, Carburetors, etc., from the manufacturers of those articles. We do all of our own machine work on raw material which we purchase.

First, let us take the situation of castings, as we buy them in the rough. The figures which we will give showing our increased cost will be percentage, and figured during the period of the time referred to above. The increase in iron castings vary considerably in the different articles. For that reason I will enumerate several important items with increases as follows: Bases, 100 per cent; cylinders, 50-100 per cent; flat work such as base doors, etc., 300 per cent. Increases in the cost of bronze castings would be approximately the same.

On completed articles of accessories such as Reverse Gears, Carburetors, Ignition Devices, etc., the increase in the cost to ourselves vary a great deal, running anywhere from 10 per cent to 100 per cent. I want to give credit here to the several manufacturers of accessories who conscientiously endeavored to avoid all increases that were not absolutely necessary, and who did keep their prices down to rational levels during the War period.

The situation of labor was of course a most unusual one, a situation that has been unprecedented in our history. We are perhaps in a most unusual position regarding this labor question. We know that the majority of manufacturers of automotive apparatus had been terribly upset by the labor situation. I want to, in this article, show my appreciation, and the appreciation of our concern, to the majority of the men in our employ who stuck to us so faithfully throughout the whole War period. At no time were demands thrust upon us by our employees. As the cost of living in our vicinity increased, we of course increased the salaries and wages throughout our organization; the total average of those increases figured about 80 per cent. We, of course, had some labor trouble, but comparatively little, compared with other manufacturers. Human nature is much the same everywhere and there was necessarily some drop off in the efficiency of our average workman, but that decrease in efficiency in our case was far smaller than that in any other organization that I know of.

Please do not misunderstand my position. Should there be a radical change in material and labor situation, the Frisbie Motor Company would be one of the first to pass on this reduction to the consumer in the form of reduced prices on its own product, but under present conditions I can assure you that we do not contemplate any reduction in price at this time, and that we are, as I have already stated, guaranteeing our present prices against declining to July.

By WILLIAM BRUNS

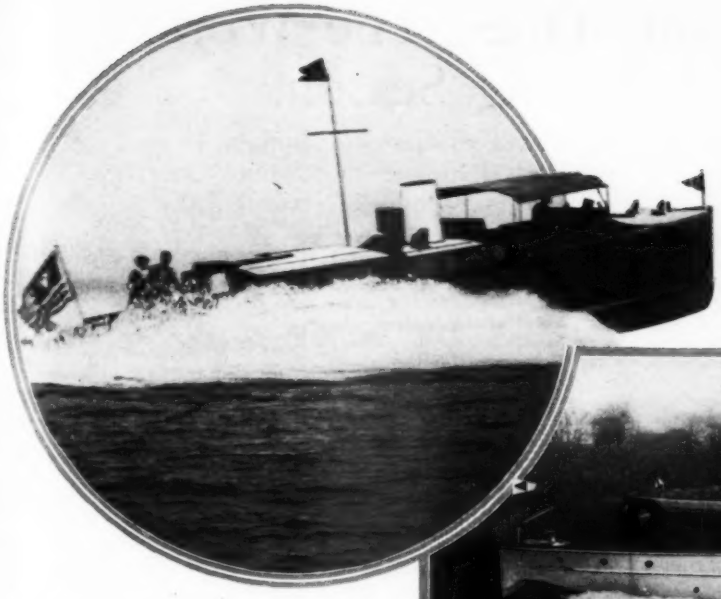
*President, Bruns, Kimball & Co.*

OUR opinion must be considered from two angles—that of distributors in our territory of some of the best known marine motors and also that of rebuilders of marine engines.

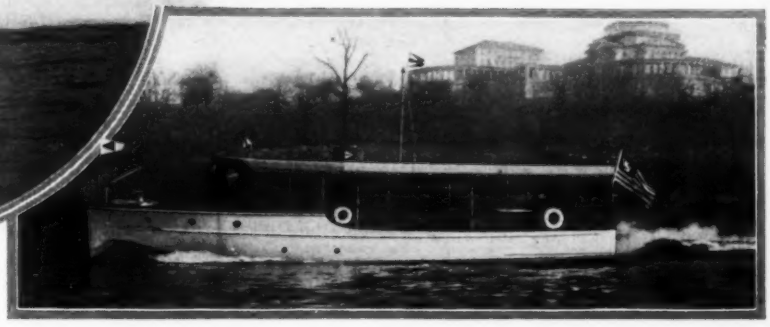
Together with the general boating public we have been looking forward, more or less in vain, to a reduction in price of machines and accessories. We believe that the reduction in automobiles, always associated closely with marine motors, led the public to expect a similar reduction on engines used in boats. Conditions, of course, controlling the automobile industry were not applicable to the marine trade and to the insiders it was a well known fact that more than one engine company came out on the short end after a year's business, whereas most of the auto companies were paying heavy excess profit taxes and could easily afford to reduce their prices.

We had been confidently expecting a reduction in price and you can imagine our surprise, not to say chagrin, when one of the best known companies we represent actually reduced the discount they give us. Their explanation was that rather than being in a position to reduce prices, *some of their costs had actually gone up* and it was either a case of raising the price of their product or reducing the commission allowed agents. They considered the first course inopportune in view of the attitude of the buying public and so chose the latter. It means that our profit on the sale of that particular motor is reduced about 10 per cent, whereas the cost of selling the machine remains just about the same—if anything a little higher.

(*Continued on page* 136)



*Oriana II, a 53½-foot cruiser, property of Arthur T. Murray, president of the American Bosch Magneto Co., Springfield, Mass. Powered with a Model F, 115 h.p. 8-cylinder Sterling motor, speed 14 m.p.h.; designed and built by the New York Yacht, Launch and Engine Co.*

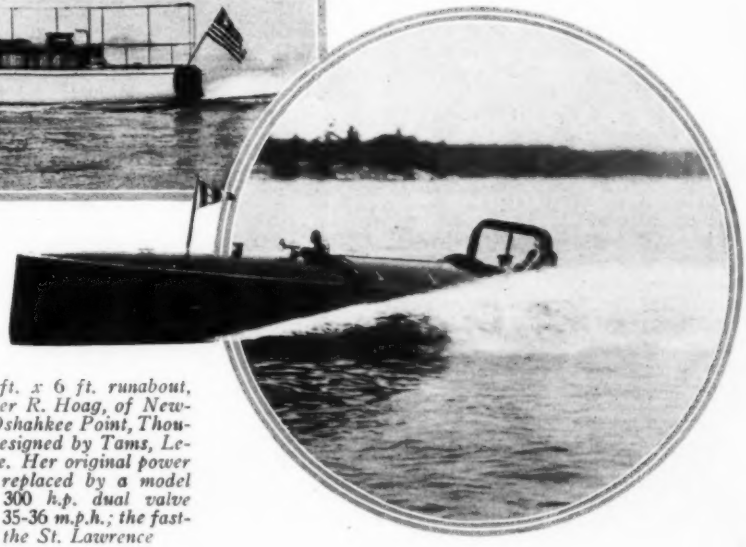


*A 50-foot express cruiser built by Luders; powered with two 8-cylinder Sterling motors. A speed of 35 miles an hour is claimed for this boat*

# A Sterling For Every Type of Boat

*Cuban runabout, 30 ft. long, 7 ft. beam. Owned by Manuel Aspuru, of Havana, Cuba. Equipped with Model GR 4-cylinder Sterling, developing 150 h.p. at 1,500 revolutions*

*Virginian, a 60-foot cruiser designed and built by Luders Marine Construction Co., Stamford, Conn., for L. W. Branders, of Larchmont, N. Y. Equipped with two 4-cylinder 50 h.p. Sterlings. Speed, 14 m.p.h.*



*Sunlight, a 40 ft. x 6 ft. runabout, owned by Chester R. Hoag, of Newark, N. J., and Oshahkee Point, Thousand Islands. Designed by Tams, Lemoine and Crane. Her original power plant has been replaced by a model GR 8-cylinder 300 h.p. dual valve Sterling. Speed, 35-36 m.p.h.; the fastest runabout on the St. Lawrence*

# Nineteen Twenty-One—The World's Greatest Racing Season

## Events at Peoria, Chicago, Toledo, Cleveland, Toronto, Buffalo Thousand Islands, New York, Philadelphia, Baltimore and Many Other Localities. Many Boats Building and New Speed Records Likely

**THE announcement in March MoToR BoatinG that a challenge had been received from England for a race this summer for the British International Trophy was the first notice of the receipt of the challenge to appear in any of the boating papers. Detroit has been definitely decided upon as the location for the races. The dates will be September 3, 5, and 6. This country has the privilege of being represented by a team of three boats. If more than three boats enter for the American team, the Motor Boat Club of America must hold elimination trials to determine the three boats which will represent this country. England, France and Spain each may be represented by teams of one, two or three boats.**

**The Mississippi Valley Association will hold the opening event at Peoria on July 4th, and the days just before and after Chicago, which hasn't had any big speed boat races for many years, is coming back strong with a big regatta during the first two weeks of August. Many new boats are building for the Fisher Trophy races to be held in Buffalo August 11, 12 and 13. Cleveland and Toledo are talking about holding events for hydroplanes. The usual races will be held by the Thousand Islands Yacht Club on August 17th, 18th and 19th. Detroit will start the International Races with a preliminary week of racing which will include the Gold Cup, the One Mile and the Wood-Fisher Races on August 27th, 29th and 30th. Toronto, as usual, will hold their races in connection with the Canadian National Exhibition on September 5th, 6th and 7th.**

**The cruiser races will not be overlooked either. New York waters will abound with real events. The Delaware, always noted for its numerous cruiser races, for all types of cruising craft, will not slack down a mite this year. Baltimore, which hasn't held a race for many a moon, will hold a big regatta in July. New Orleans and other cities on the Gulf have announced important races.—EDITOR.**

### *Detroit's Race Plans*

IT is announced by Commodore Judson of the Motor Boat Club of America, the recognized club of the United States in contests for the British International Trophy, that the Detroit Yacht Club, by its Commodore, Garfield A. Wood, who won the Trophy at Cowes, England, last year with his remarkable hydroplane, Miss America, has accepted the challenge for a race to be held in the United States this coming season, and that the race will be held in the protected waters adjacent to Detroit on Lake St. Clair or the Detroit River on September 3, 5 and 6, 1921.

This race will follow the races for the A. P. B. A. Gold Cup and One Mile Championships of North America which will be held on August 27, 29, 30 and 31. At the same time will be held the races for the Wood-Fisher Trophy which is a new Trophy presented by Gar Wood and Carl G. Fisher to the American Power Boat Association for displacement boats under 32 feet in length equipped with any make of engine.

It will thus be seen, beginning with August 27 and continuing practically every day until September 6, that there will be held what will undoubtedly be the most important, interesting and exciting motor boat races that have ever been held anywhere in the world. It will be a carnival well worth witnessing and will undoubtedly be attended by thousands of motor boat enthusiasts from all over the world. Never before in the history of motor boat racing has there been held at one time and place so many races of importance. The schedule, embracing as it does, the race for the championship of the world, the race for the famous Gold Cup emblematic of the A. P. B. A. championship of North America, the race for the one-mile championship of North America and the first race for the Wood-Fisher Trophy as described above. Of course, it may be confidently expected that all speed records in each of these classes will be smashed and that the United States in the British International Trophy Race will be able to maintain its supremacy. It will be remembered that Mr. Wood with his Miss America at Detroit last fall after he had returned from England and had won the British Trophy set up a record with this boat of approximately 80 miles per hour, and he will build a faster boat for the coming important contest. The name of the new boat will be Miss America II.

### *Fisher Trophy Races for Buffalo*

BACK from Miami, Florida, after attending the Mid-Winter regatta there which featured the Fisher Trophy races, Arthur J. Utz, Treasurer of the American Power Boat Association, and manager of the Eastern Sales & Service Branch of the Hall-Scott Motor Car Co., Associated Service Building, Buffalo, reports that the prospects for the $5,000 Fisher Trophy races, which are to be held in Buffalo during the month of August, are exceedingly bright.

This three-day regatta is to be held on the Niagara River course under the auspices of the Buffalo Launch Club, of which Ralph H. Sidway is Commodore. The races and records will be official, as the course, etc., will be approved by the American Power Boat Association. The rules governing this race make it the supreme test for marine engines and hulls alike, and so great is the interest in this event that motor boatmen and the heads of the leading concerns of the boat and engine industry, both of this country and of Canada, will flock to Buffalo for the events.

Webb Jay of Chicago and Miami, who won the Trophy at the recent Miami regatta with his 32-foot Hall-Scott powered Hacker built runabout Adieu, assured Mr. Utz that he would ship his boat to Buffalo to defend the Trophy. Readers of MoToR BoatinG will recall, that in the automobile racing days, Webb Jay met with a bad accident at Buffalo when he drove his White steamer through the fence and was so badly injured that his life was despaired of. However, he won his race with Death, and is still prominent in the Automotive industry as the inventor of the Stewart Vacuum system used on practically all automobiles. Mr. Jay states that the Fisher trophy is the finest Trophy he has ever raced for, and the sport much safer and far more pleasant than the more strenuous track game.

Commodore H. B. Greening of the Royal Hamilton Yacht Club of Hamilton, Ont., owner of the Rainbow, which won the Fisher Trophy at Detroit last year, also states that he will be on hand, and those who know Commodore Greening are firmly convinced that he will have a real challenger in the Buffalo race. Commodore Greening took the Rainbow all the way to Miami, Fla., to defend the Trophy, but although three miles an hour faster than she was at Detroit last summer, due to refinements and improvements to her hull and engine, she was decisively beaten by Mr. Webb Jay's Adieu, a boat that was built within thirty days and had only ten days' try out before the race. Commodore Greening is surely going after Webb Jay's scalp during the Buffalo meet.

Carl G. Fisher of Indianapolis and Miami, owner of the Indianapolis Speedway, and donor of the Trophy, has already shipped his fast boat Miss Miami back to the Purdy Boat shops at Trenton, Mich., where she will be properly groomed for the Buffalo regatta. Mr. Fisher will drive his own boat, and predicts he will win his own Trophy at Buffalo.

Orlo II, a Sea Sled, powered with two motors totaling

(*Continued on page* 110)

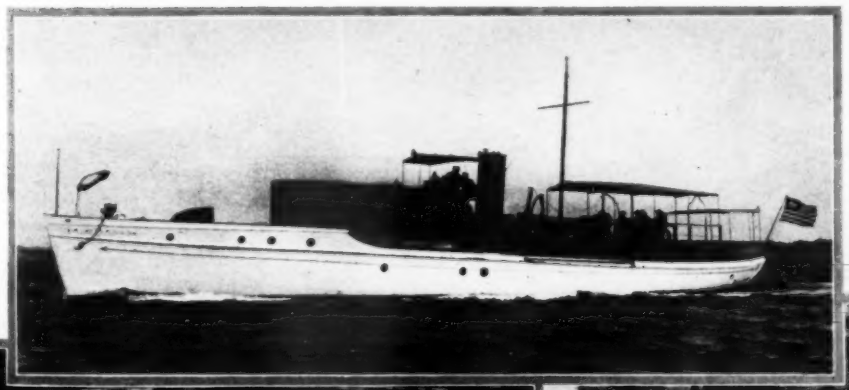
# Maryann, a Husky Cruiser

*Maryann is a substantial express cruiser powered with two Buffalo motors shown below*

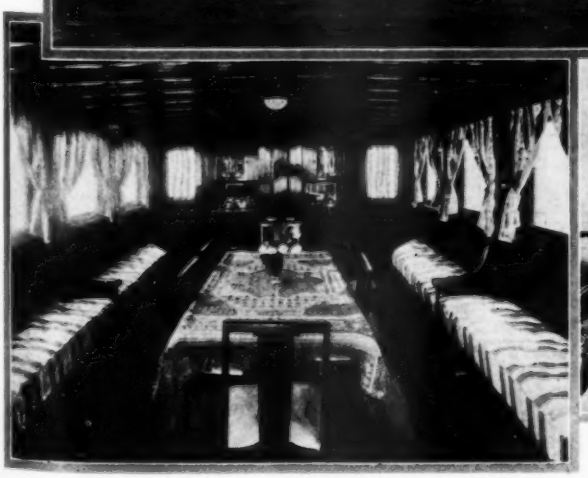
MARYANN, a V-bottom express cruiser, owned by J. C. Steadman, Beaumont, Texas, is 60 foot over all. Her draft of only 2½ feet enables her to traverse the intercoastal canals at any tide. She is equipped with a pair of 40-60 h.p. Buffalo engines of the cruiser type which give her a speed of 12 m.p.h.

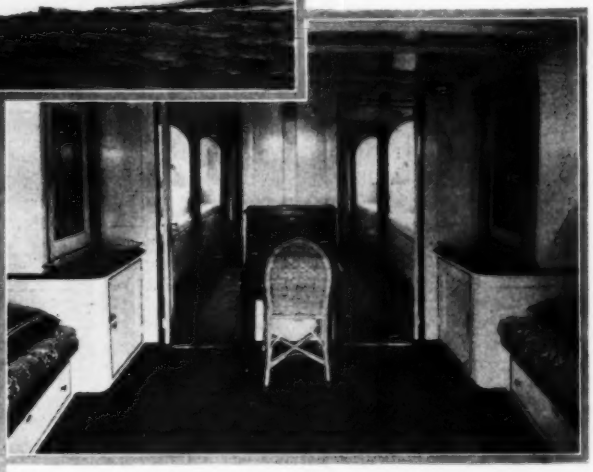
"I have recently made a 1,000 mile cruise," writes Mr. Steadman, "and I can say I never saw two engines work better than the Buffalos in my boat. There is no vibration from the motors. Standing on deck you cannot realize the motors are running. I cannot say enough for the real service I have received from the Buffalo motor."

# Kanised, the Improved Cruiser



*The 100-foot yacht Kanised was recently refitted at the New York Yacht, Launch and Engine Company, Morris Heights, New York. A new deck house was built on it and new furniture and decorations were installed making the boat one of the most attractive afloat. The power equipment is 125 h.p. Standard motor and auxiliary Delco set furnishes electricity for lighting*





*The refinishing of Kanised included new furniture and decorations throughout the boat*

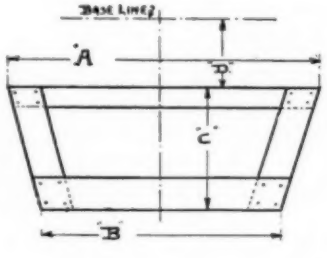
# Build a Boat

## MoToR BoatinG's Home Builders' Department Which Will Contain a Design of a Small Boat Each Month Which Can Be Easily Built at Home

### NO. 3—FLATTIE, A SIXTEEN-FOOT UTILITY BOAT

WHILE not exactly built for speed this little boat should prove a useful addition to the fleet of many yachtsmen. It will make an ideal little boat for service at the shore bungalow and it will serve to carry guests and baggage as well as many utilitarian purposes. When fitted with a single cylinder motor of from 3 to 4 h.p. a speed of 7½ to 8 m.p.h. should readily be obtained. This is ample for a boat of this type and the simplicity of the single cylinder motor will insure reliability at all times.

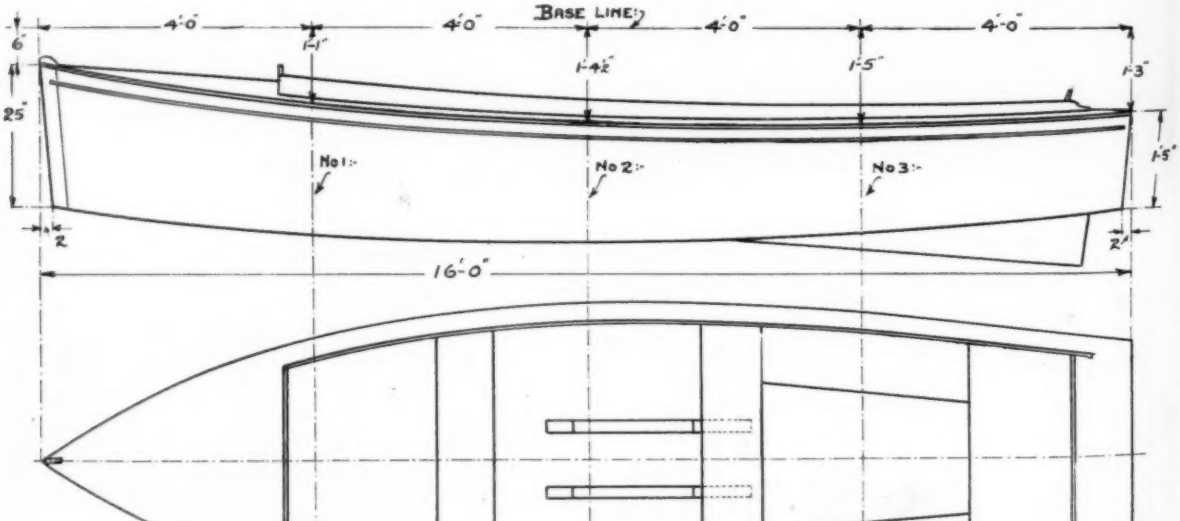
To begin the construction it is necessary to lay out a mold for each of the three stations shown and also for the transom at the stern. The dimensions given are complete and this will be a simple matter. Heavy paper patterns should be made deducting the thickness of the planking which should be five-eighths on the bottom and sides. Oak frames can then be built about 2 x ⅝ inches at each mold. A chine of 1¾ x ⅝ inch oak should be fitted at the corners. These frames can be assembled with the molds in an inverted position and in correct relation to the base line according to the dimension D. The transom should be a piece of ¾ inch oak notched for the chine and sheer battens to within ¼ inch of its back face. A notch for a keelson 4 inches by ⅞ inches should also be made. Sheer battens about 1½ x ⅝ inch spruce can be run fore and aft from the stem to the transom. The frames are notched to permit the battens to be flush with the outside edge of the frames. The stem forward is made with a false piece on the outside and a notched inner piece to receive the ends of the battens and keelson. A breast hook of oak should also be supplied. A transom knee of two-inch oak can be fitted into place and will serve to support the transom securely. The keelson should be tapered toward the stem to suit and securely fastened where it crosses each frame and at the transom. The battens can also be fastened to the frames and the whole boat rapidly begins to take shape.




Care should be exercised in locating the battens that the spacing is uniform at each frame and also that both sides of the boat are made exactly alike. The planking of ⅝ inch cypress or cedar can be applied beginning with the one at the chine and cutting it to fit to the center line of the first batten. The next plank will begin here and finish at the second batten while the last one will finish at the sheer line. Half round moldings can later be applied along this line to give the proper finish. The planking should proceed from side to side; that is, the lowest plank should be applied to both sides before the next higher one is put on. The bottom is planked thwartships with ⅝ inch cedar, cypress or white pine which can be fastened at the chine and at the keelson. The lower edge of the lowest side plank and chine piece should be planed off to give a smooth bearing for the bottom plank. The ends of the bottom planking are finished up to conform to the sides of the boat. Protecting strips can be applied to the bottom at the edges to serve when the boat is hauled out. Joints between planks

| MOLD | A. | B. | C. | D. |
|---|---|---|---|---|
| #1 | 3'-7" | 2'-6" | 1'-11" | 1'-1" |
| #2 | 4'-7" | 3'-7" | 1'-9" | 1'-4½" |
| #3 | 4'-3½" | 3'-6" | 1'-7" | 1'-5" |
| STERN | 3'-4" | 2'-10" | 1'-5" | 1'-3" |

(*Continued on page 64*)




*Plans for building a 16-foot family motor boat*

*Sea Wolf, a new specimen of this name, is the fourth descendant of the family owned by LeRoy Moody*

# Sea Wolf, Latest Edition

## The Fourth Boat in the Series of this Name Is an Improvement Over the Earlier Models

ONE of the most persistent and consistent enthusiasts in the East is LeRoy Moody, treasurer of the Lancia Motor Car Company of New York. For the past six or seven years he has been the owner of a series of boats which he called Sea Wolf. The one illustrated herewith is the latest and the fourth in the line.

This new Sea Wolf is 40 feet long by 9 feet, 4 inches beam. She was designed by L. Kromholz and built by the College Point Boat Corporation. Her power equipment is a six-cylinder model M6 Van Blerck which is able to drive a boat at from 19 to 20 m.p.h. This speed is exceptional when the boat's sturdy construction and length are taken into consideration.

The motor in Sea Wolf is equipped with the new Van Blerck fuelizer attached to the manifold, whereby the low grade of fuel now on the market is preheated and distributed to each of the six cylinders in such a way as to give maximum power and maximum fuel efficiency at all motor speeds. The Van Blerck fuelizer works on an entirely different principle from the ordinary type of preheating devices. The trouble with hot-spot manifolds and exhaust-heated manifolds is that they supply heat at high engine speeds but not at low engine speeds, although it admittedly is at low engine speeds that heat at the manifold is required; consequently the tremendous efficiency of the Van Blerck fuelizer is brought about through its ability to supply sufficient heat at low engine speeds and that it supplies less and less heat as the engine speed increases, and automatically supplies sufficient heat of itself.

One of the principal reasons why Mr. Moody selected the Van Blerck motor for his new boat was the fuelizer. The flexibility attained with this device is remarkable. The running of a boat on which this electrically operated heating device is installed is a pleasanter recreation.

# Yard and Shop

## Notes of Interest to Both Owner and Manufacturer

### *A New Hydroplane Class*

To further racing amongst single-engined hydroplanes, of which there is much talk at Cleveland, Toledo and Chicago where racing of this kind is new, the Central Marine Service Corporation of Detroit are planning to build a 22-foot by 6-foot Smith Twin-Six equipped hydroplane at the price of a high-grade runabout. Since a positive guarantee of at least 65 m.p.h. goes with these boats, hydroplane racing will undoubtedly become increasingly more popular. Inter-city regattas between the cities mentioned are being planned and a decided impetus is being given to the sport. Naturally, this series of races is open to all single-engined hydroplanes and the more there are to take part the better it will be for the sport. In undertaking to sell these boats at cost the Central Marine Service Corporation are doing a big thing to promote this type of racing. Much interest is evidenced in this class of boats and it is hoped to have a boat from New York waters participate in the numerous races which will be held.

All the many readers of MoToR BoatinG will be pleased to know that the Central Marine Service Corporation is planning to produce in quantities the 18-foot Hand designed runabout Jane which was published as the second one of the series of twelve Hand designs during the year 1920. This little boat was one of the most popular of this series, and when the price at which it is proposed to sell these is announced many more of them will be quickly put into service. The specified power plant according to the original design is a 20 h.p. Kermath motor. The boat will probably be able to do 17 to 18 m.p.h. without difficulty. The cockpit of this boat will be entirely clear and a little passage is left between the forward pair of seats so that the entire cockpit is available without the necessity of having to climb over the back of the seat to reach the driver's position.

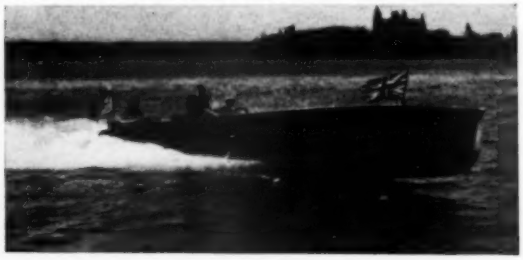
### *Schooner Seaward Built Down East*

In connection with the illustration of the schooner Seaward which was shown in the March issue of MoToR BoatinG further information has come to hand. This boat was designed by John G. Alden, the Boston Naval Architect, and built at the yards of Frank Adams, East Boothbay, Maine. After her completion she sailed through the South Sea Islands, ending her cruise at San Francisco, where she was sold and converted into a yacht. Her dimensions are 106 feet over all, 82 feet waterline, 21 feet 8 inches beam, and 11 foot draft. Her design follows typical Gloucester fishing schooners of the knockabout model and her owner was well pleased with the boat.

### *Reverse Gear Efficiency*

An unusual test of the McKinnon Marine Reverse Gear was recently conducted in the laboratory of the Mechanical Engineering Department at Case School of Applied Science. Power was supplied to the clutch by means of a Sprague-Electric cradle dynamometer; and the power delivered by the clutch was determined by means of a Prony brake. The speed of the dynamometer shaft and the clutch shaft was taken by speed counters and up to the maximum capacity of the clutch no slipping was noticed. About two gallons of lubricating oil was used in the clutch casing. The maximum torque that this clutch will transmit is 12,000 inch-pounds. The power wasted in the clutch was definitely ascertained and the mechanical efficiency is found to be remarkably high at all speeds up to 1,000 r.p.m. At high speeds the clutch was transmitting power vastly in excess of its rating which resulted in some heating. When operating in the reverse the results checked almost exactly with those obtained when running ahead, and it is safe to say the clutch will operate with equal efficiency in either direction. A table of results of the test is given below:

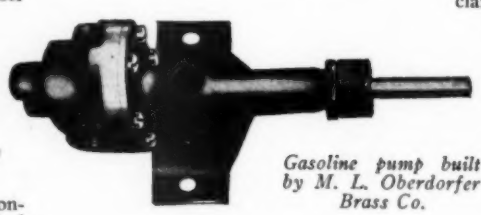
| Revolutions Per Minute of Clutch Shaft | Horsepower Supplied to Clutch | Mechanical Efficiency of Clutch P.C. |
|---|---|---|
| 100 | 20.70 | 99.2 |
| 200 | 41.48 | 98.8 |
| 300 | 62.32 | 98.6 |
| 400 | 83.25 | 98.5 |
| 500 | 104.23 | 98.3 |
| 600 | 125.29 | 98.1 |
| 700 | 146.43 | 98.0 |
| 800 | 167.73 | 97.8 |
| 900 | 189.32 | 97.5 |
| 1000 | 211.22 | 97.1 |



*Barkeroll, owned by E. J. Barker, Chicago, and used in the Thousand Islands, is a 32-foot runabout equipped with an M 6 Van Blerck motor. When turning a 30-inch pitch Columbian propeller at 1400 r.p.m. a speed of 33½ miles is secured*

**RACING DATES FOR 1921**

| | |
|---|---|
| Feb. 10, 11, 12. | Fisher Trophy Races at Miami, Fla. |
| July 4. | Mississippi Valley Annual Regatta. |
| July 9. | New York to Block Island Cruiser Race. |
| July 14, 15, 16. | Regatta for Motor Boats at Baltimore, Md. |
| July 16. | New York to Newburgh and return. |
| July 30-Aug. 13. | Pageant of Progress Races, Chicago. |
| Aug. 5. | A. P. B. A. Cruiser Championship of America. |
| Aug. 11, 12, 13. | Fisher Trophy Races at Buffalo, N. Y. |
| Aug. 17, 18, 19. | Thousand Islands Challenge Cup Races on the St. Lawrence River. |
| Aug. 27, 29, 30. | Gold Cup, One Mile Championship and Wood-Fisher Trophy Races at Detroit. |
| Sept. 3, 5, 6. | Races for British International Trophy, at Detroit. |
| Sept. 5, 6, 7. | Races at Toronto. |



*Gasoline pump built by M. L. Oberdorfer Brass Co.*

### *Adieu, a Stock Boat*

The winner of the Fisher Trophy races at Miami last month was in every way a commercial job and did not run into a lot of money, as might be supposed. In fact, John L. Hacker of Detroit, her designer, claims that she can be readily duplicated for under $8,500. This cost, compared with the costs of some of the other competitors, shows a vast difference in favor of Adieu. The weights of this class of boat might also be of interest. Adieu in regular trim without passengers will weigh from 3,600 to 3,700 pounds. It is possible for anyone to get a Fisher Trophy racer at a cost of less than $10,000, and, according to the designer, the speed of a similar boat can be increased appreciably using the same motor.

### *Audible Boat Signals*

Every yachtsman will agree with an eminent maritime authority that a boat needs good lights and good signals. A disastrous collision between a submarine and steamship off the Atlantic Coast one night recently is but one illustration of the need of adequate signals.

The average motor yacht audible signal is often a weak link in an otherwise excellent chain of equipment. Electric or mechanical horns, owing to their short range of audibility, leave no margin of safety. Whistles, when loud enough, require a greater supply of compressed air than is always practicable.

A recent European invention, called the Strombos, promises to be a long step forward in the development of marine signals. Used abroad in the late war as a powerful warning signal to large bodies of troops against enemy gas attacks, the Strombos is said to be ideal for marine motor craft owing to its great range of audibility, simplicity and economical consumption of compressed air, the latter requirement being less than one-tenth that of an air-whistle, it is claimed.

It is further stated that the tone of this new device, besides having great power, is pleasant to hear. Considering the decidedly unnautical sound of the average marine signal, this in itself should be a welcome improvement.

A high-power signal on navigable waters tends to promote safety, not to mention convenience, and its proper use will go far toward eliminating regretable accidents such as mentioned above.

It is a very simple device. There are no rotating parts or no adjustments or parts which require any attention in any way.

## *Centrifugal Bilge Pumps*

Every power boat, large yacht and barge owner has at some time been troubled with bilge water.

Formerly the work of pumping out this water was done by hand or with a small, low-capacity pump, which made it slow and hard work.

With a 2 h.p. Evinrude Centrifugal Pump the bilge water can be quickly removed—the capacity is 6,000 gallons an hour at a 5-foot head.

Evinrude pumps are now being used by contractors, summer home owners, and irrigators. The U. S. Government is using Evinrude pumps for bailing their scows on the Mississippi River.

The pump complete with power plant weighs only 115 pounds, is 24 inches high and covers the small space of 19½ inches square. This permits it being handled easily by two men.

The Evinrude Unit Centrifugal Pump is powered by the Standard Evinrude Motor, over 120,000 of which are now being used on boats.

## *New Evinrude Distributor*

The Peterborough Canoe Company, Peterborough, has been appointed the Evinrude Distributor and Service Station for the Province of Ontario. They will distribute the motors manufactured by the Evinrude Motor Company, Milwaukee.

A complete stock of Evinrude rowboat and canoe motors will be carried. Repair parts and accessories will also be kept in stock, so that Evinrude owners and dealers can get repairs quickly.

In connection with the sales work, they will take care of the service work on motors. Their repair department will be in charge of competent men, thus making it possible for owners to save going to the trouble of shipping their motors for repairs to distant points.

Dealers in Ontario are urged to write to the Peterborough Canoe Company for agency propositions.

## *Latest Developments in Propellers*

The Webber propeller wheel, said to be the latest development in motor boat propellers, was designed by James M. Webber, of the Marine Wheel Company, Grand Rapids, Michigan, and it is believed it will be cordially received by owners of pleasure boats.

*H. F. Palmer of the Albany Boat Works, nicknamed Kos Kob, was so pleased with life at Miami that he had to write the adjoining verse*

E. J. Marin, president of the Marine Wheel Company, was fortunate enough to secure the services of Mr. Webber, who was for eighteen years connected with the older organization.

The Webber propeller is particularly adapted to boats with powerful engines and it is unusually effective in backing up. Its broad blades are one-third its diameter, and has been most satisfactory under the most severe tests. The Webber wheel is being made in sizes from 10 to 48 inches in solid bronze, cast steel and cast iron, furnished in two or three blades, right or left revolution. In the bronze it can be supplied to the trade in any pitch desired.

### LIFE IN MIAMI

Oh! Commodore, you dandy boy
There's many things to say
To make life ripple pleasantly
Or make a happy day.

The things you've done since coming here
Have helped more ways than one.
You've made life good in Miami,
And helped out with the fun.

You've played your part, have brought us joy
With stories of the past—
Your old Kit-Cinq, Kit-Trois, Kit-Deux
Should never be surpassed.

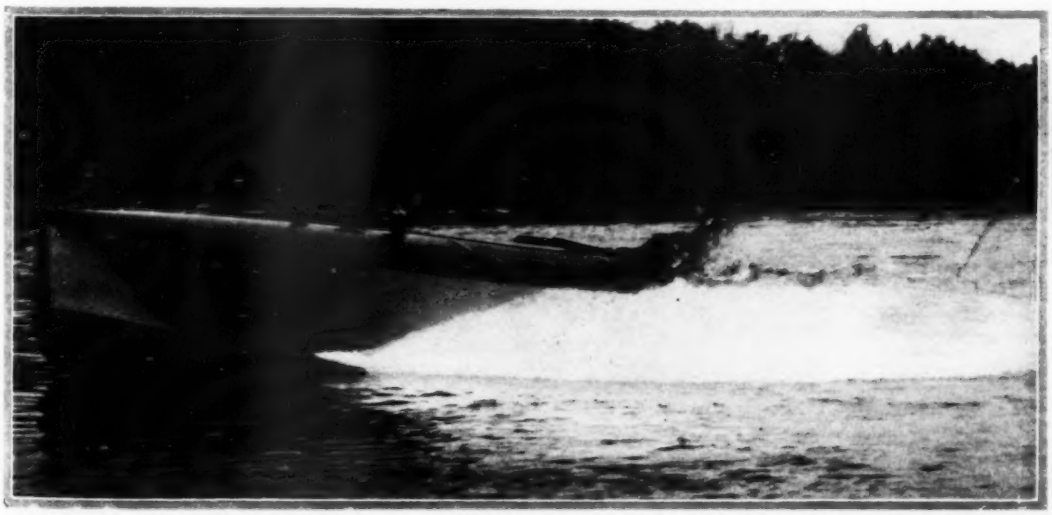
You've brought it on yourself, Old Boy,
You've dimmed your old-time fame,
You brought the real Kit here to us
We realize the name.

Kit, Kit-Deux, Kit-Trois, Kit-Quatre,
Kit-Cinq and Kit some more,
We think you are some Kitty Boy
And flag you from the shore.

We'll watch you in your Kitty-Sept
And praise your modern pace,
As you set up a record fair
In the next Carl Fisher race

## *Boat Headquarters at Baltimore*

To put Baltimore on the map as far as boating is concerned, a new institution in Baltimore is introduced to you—Staley's



*Mysosis III, a typical Thousand Island aquatic automobile. Her owner, G. S. Olds of New York, lives on one of the many islands and the only means of transportation is the boat. For reliability he bought a good boat and installed a good engine, otherwise he might have been compelled to stay home sometimes if he wanted to go somewhere and get there quickly. The builder installed a model M4 Van Blerck which drives her 28 m.p.h.*

Yacht Agency—which will endeavor to stimulate the interest of Baltimore and the surrounding country in the most healthful of outdoor sports, motor boating in all its forms. A Bureau of Information will be maintained to be devoted to motor boat and yacht owners, both local and visiting, with headquarters at one of the local yacht clubs. Information will be kept up-to-date with reference to weather conditions, repair shops, gas and water stations, etc. Information of a useful kind should be sent to them by all interested.

## A Gasoline Pump

A little pump designed particularly to distribute gasoline in installations where the main tanks are located below the carburetor level is made by the M. L. Oberdorfer Brass Company, Syracuse. A small auxiliary tank located above the carburetor can easily be kept filled so as to feed by gravity to the motor. It has a capacity of two-tenths gallons per hundred revolutions. The bearings are extremely long and ample brass glands are fitted to prevent leakage. In spite of the fact that all parts are bronze except the shaft and screws, its weight is only 1¾ pounds.

## New Knox Agents

In order to distribute the new Knox marine motor more effectively in the East the following well-known firms have been appointed to handle the distributions in their several localities:

New York City—Bowler, Holmes & Hecker; Philadelphia — Marine Equipment & Supply Co.; Boston—Gray-Aldrich Company.

## High Capacity Generator

A generator designed particularly for the services of the small open motor boat owners is being produced by the Comet Electric Company of Indianapolis. This is the only marine lighting equipment which contains in one unit the generator, reverse current relay, ammeter, switch and fuse. These machines are all tested at the factory and none are sent out until they have developed an overload capacity of at least 100 per cent. Machines of this type are often sadly abused and it is a common failing to try to pull more current from the machine than it can safely produce.

## Yacht Directory

A concise directory of small yachts, sailing vessels and motor boats on the Atlantic Coast and the Great Lakes is in course of preparation by B. P. Young of N. E. McClelland & Co., Ltd., No. 2 Stone Street, New York. This should prove interesting to all owners of small vessels which are not likely to be registered in *Lloyd's Register of American Yachts*. Owners of the smaller powered yachts and sailing vessels are cordially invited to send the principal particulars of their yachts to the above address as early as possible in order that the directory may be issued as early in the season as possible.

*Volney E. Lacey, President of the Rochester Boat Works, practices what he preaches. In his own 40-foot standardized Rochester cruiser he has installed a D-6 Scripps motor. Being an engineer and designer of wide experience, he naturally knew where to seek weak points in motor construction. On numerous long trips and vacation journeys the engine has always been the most willing unit of the boat*

## To Sell a Million Bear Cats

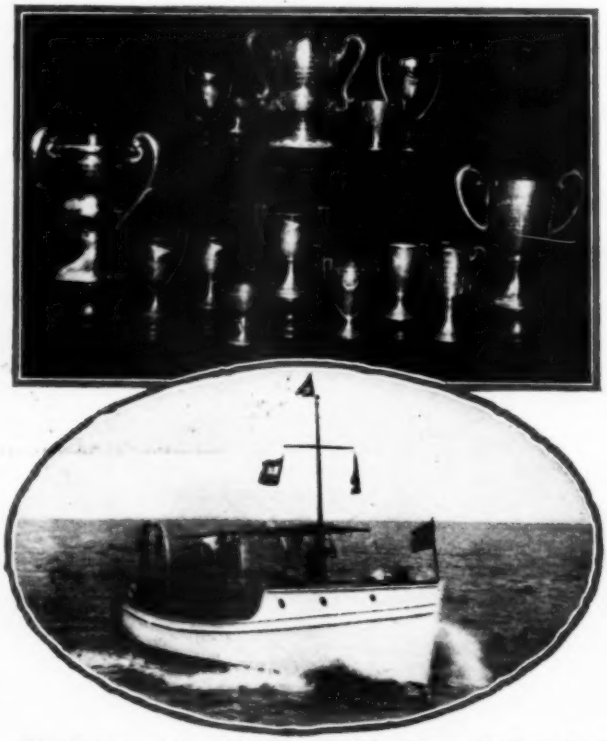
Leonard H. Thomson, recently appointed Sales Manager for the Belle Isle Boat & Engine Company, of Detroit, stopped in our offices not long ago and was very enthusiastic over his new job. He announced that he had hopes of selling a million, more or less, of the popular Belle Isle Bear Cats, the 26-foot runabout equipped with a four-cylinder, 125 h.p. Hall-Scott motor which proved to be one of the principal attractions at the recent New York Motor Boat Show.

## Master Reverse Gear

Reverse gears with capacities of from 12 to 85 h.p. at 1,000 r.p.m. are now in production by the Master Motor Co., Lockport, New York. These gears are fitted with a master clutch of the multiple-disc type designed to insure a smooth engagement and rigid holding power. All gears and shafts are of nickel steel, hardened and ground with bronze bushings working on hardened pins in all rotating gears. Cases are of aluminum to minimize weight and consequently provide a gear exceedingly efficient for the weight. The reversing handles are nickel plated with a ball end for use in runabouts, while on gears intended for installation in cruisers a special reversing lever is fitted to suit the particular requirements.

## Palmer Brings Out a New Motor

Word has just been received of a new overhead valve Palmer motor to be built in four-cylinder sizes with a bore and stroke of 3 by 4½ inches. The motor will be entirely enclosed and be fitted with double ignition. Carburetion is assisted by means of a hot-air intake which will enable the motor to run well on the low-grade fuels common nowadays. An overhead camshaft drives all the valve actuating mechanism and the enclosure over the valves effectively quiets the noise of the valve action resulting in an unusually quiet motor. A two-unit electric starting motor and generator will be fitted as a standard. The power developed will be 12 h.p. when the motor is operating at 1,000 r.p.m., and this should make it a most suitable and efficient little motor for small runabouts and yacht tenders.



*The 45-foot cruiser Nathalie, owned by George E. Demack of New Orleans, while in the possession of her previous owner, Dr. W. M. Miller of that city, was successful in winning many cups and trophies in numerous contests as shown above. Nathalie's power plant is a three-cylinder 7 x 8 inch Anderson engine*

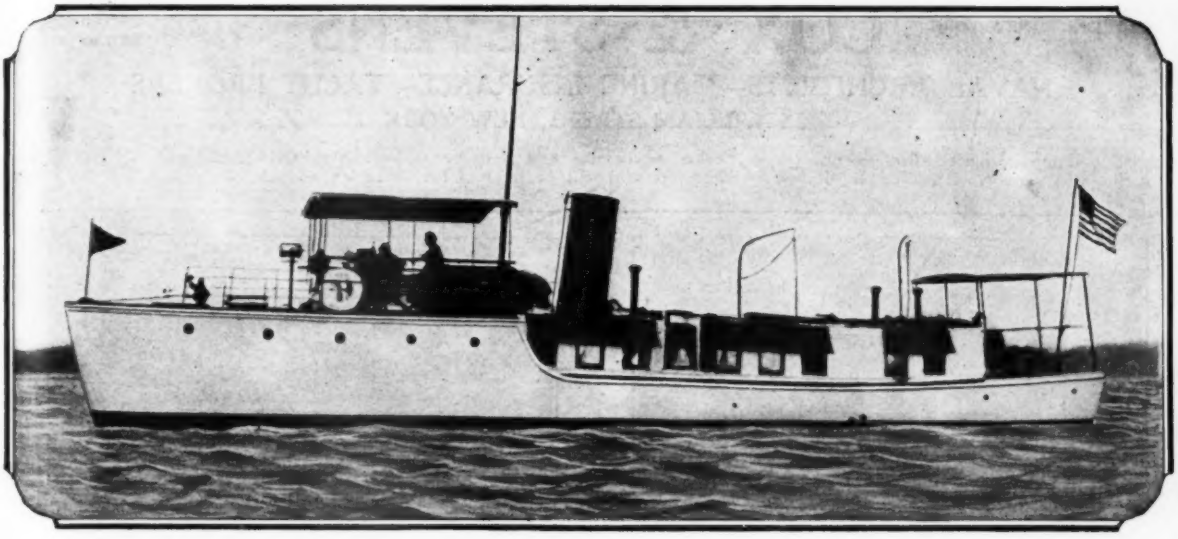
## News Notes

The Atlantic Marine Exchange have bought from the U. S. Government many of the unused supplies. The weatherproof suits advertised by them in this issue of MoToR BoatinG are one of these. They have been adopted as regular equipment by many of the Mountain Climbing Club, and most of the fishermen sailing out of Boston Harbor use them.

The Boston Motor Boat Supply Company reports the sale of a number of motors and they have been compelled to increase their force of mechanics owing to increased business. A complete line of marine hardware of all descriptions is now procurable from them.

The Bissel Varnish Company of Bridgeport have just published a new booklet, "How to Paint a Boat," which is most valuable. It describes the best way to repair old work and to preserve and paint the new.

The Gray-Aldrich Company of Boston have taken on the new Knox Motor manufactured by Knox Motors Associates of Springfield, Massachusetts. This will complete a full line of high grade motors handled by the Company.



# "and the 'Mayme' is Valsparred, of course!"

THERE'S an old Spanish saying, "When the tailor makes his own suit, it is cut of the best cloth."

P. M. Child knows marine varnishes from A to Z. As manager of the firm Davis & Child, of Washington, D. C., he is constantly buying and selling motor boat and yacht supplies. He knows the relative merits of every varnish on the market. So when his own yacht "Mayme" needs re-finishing or brightening up, Mr. Child uses Valspar as a matter of course.

As a marine varnish Valspar has no equal for rugged, unfailing protection against fresh and salt water, sun, oil and gasoline.

Ask the man whose boat is always ship-shape. He'll tell you it is "*Valsparred, of course.*"

## VALENTINE & COMPANY

*Largest Manufacturers of High-Grade Varnishes in the World—Established 1832*

New York Chicago Boston Toronto London Paris Amsterdam

W. P. FULLER & Co., Pacific Coast

VALENTINE'S VALSPAR

The Varnish That Won't Turn White

**VALENTINE & COMPANY, 456 Fourth Ave., New York**

**Special Offer**

For your dealer's name and 15c in stamps, we will send you a 30c sample can of Valspar—enough to finish several square feet of surface. Fill out coupon.

Dealer's Name.....

Your Name.....

Your Address.....

M.B.-4-21

Cable Address:
BROKERAGE, NEW YORK

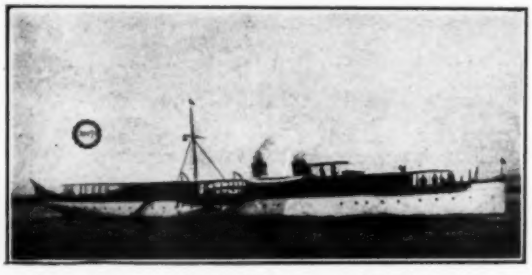
# COX & STEVENS

Telephones:
BROAD 1924
BROAD 1375

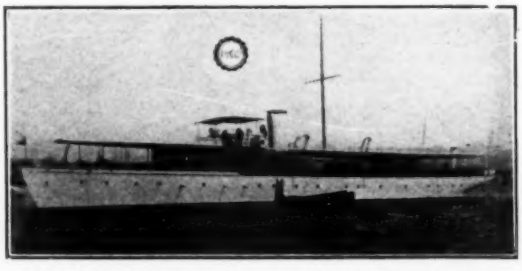
## NAVAL ARCHITECTS—MARINE INSURANCE—YACHT BROKERS

### 15 WILLIAM STREET, NEW YORK

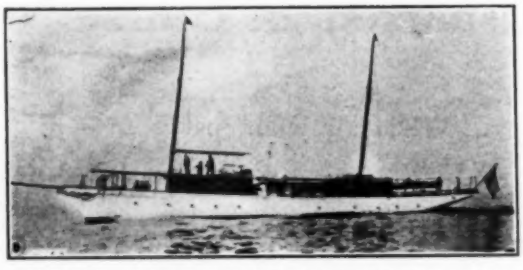
Complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request.



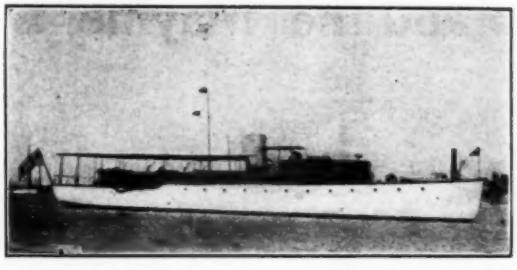
No. 3047—For Sale—Particularly attractive 165 ft. fast oil-burning twin-screw, steel steam yacht. Speed up to 19 miles. Beautifully finished and furnished. Large accommodation includes dining saloon and music room on deck, six staterooms and three bathrooms below aft. Cox & Stevens, 15 William Street, New York.



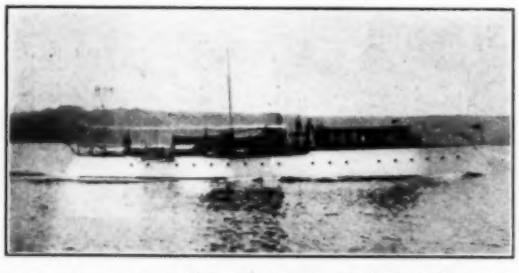
No. 1466—For Sale or Charter—Particularly desirable 140 ft. twin-screw steel cruising power yacht. Speed up to 18 miles; two 300 H.P. Standard motors. Dining saloon and social hall on deck; 3 double and 1 single staterooms, 3 bath and toilet rooms, etc. Recently overhauled thoroughly at large expense. In splendid condition. Cox & Stevens, 15 William Street, New York.



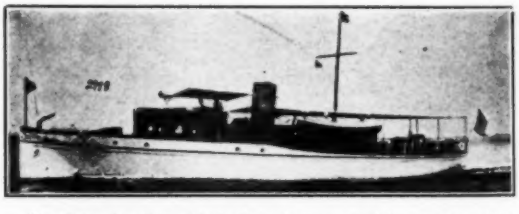
No. 40—For Sale—Flush deck steel steam yacht, 140 x 110 x 18 x 7.6 ft. draft. Has two deck houses, after one being used as a social hall. Quarters handsomely furnished and well laid out. Boiler and engine new 1916. Speed up to 14 miles. Cox & Stevens, 15 William Street, New York.



No. 463—For Sale—Steel, twin-screw cruising power yacht; 110 x 17.6 x 6 ft. Speed up to 14 miles. Two 100/125 H.P. air-starting, reversible Standard motors. Accommodations include deck dining saloon, main saloon, two double and two single staterooms, bathrooms, two toilets. Handsomely finished and furnished. Cox & Stevens, 15 William Street, New York.

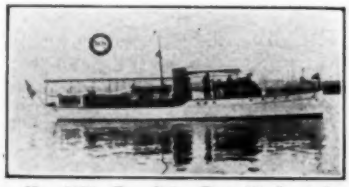


No. 979—For Sale—Might Charter—Especially desirable 98 ft. twin-screw cruising power yacht. Speed up to 16 miles. Standard motors. Deck dining saloon, three double and one single staterooms, two bathrooms etc. Teakwood deck house and deck trim. Completely overhauled, new furnishings throughout. Price low. Cox & Stevens, 15 William Street, New York.



No. 2978—For Sale—Desirable twin-screw cruising power yacht; 80 x 14 x 4 ft. Speed 13 miles; two 50/60 H.P. Twentieth Century motors new 1919. Dining saloon, two double staterooms, bathroom and two toilets, galley, etc. Recently thoroughly overhauled at large expense. Cox & Stevens, 15 William Street, New York.

No. 3151—For Sale or Charter—Particularly desirable twin-screw houseboat; 77 x 17.6 x 3 ft. Speed 11 miles; two 6 cyl. 60-70 H.P. Standard motors new 1919. Large deck-house containing social hall; main saloon, two double and two single staterooms, two bath and toilet rooms, etc. Handsomely finished and furnished. Cox & Stevens, 15 William Street, New York.



No. 3533—For Sale—Fast 72 ft. twin-screw cruising power yacht. Speed up to 17 miles; two 6 cyl. 125-150 H.P. Winton motors. Dining saloon, two double staterooms, bath and two toilets, galley, etc. Cox & Stevens, 15 William Street, New York.

No. 2758—For Sale—Bridge deck cruiser 65 x 13 x 3.6 ft. draft. Deck house forward containing dining saloon and galley. One double and one single stateroom. "20th Century" motor. Independent lighting system. Speed up to 12 miles. Cox & Stevens, 15 William Street, New York.

*Advertising Index will be found on page 142*

NAVAL ARCHITECTS
ENGINEERS
YACHT BROKERS
MARINE INSURANCE

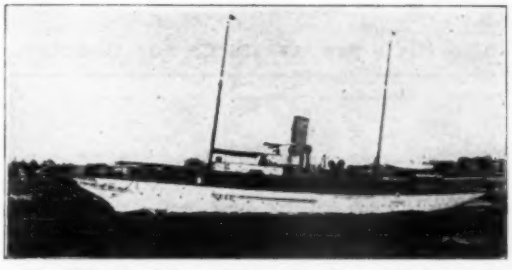
# HENRY J. GIELOW, Inc.

25 WEST 43rd STREET, NEW YORK

Tel.: Murray Hill 9134
Cable Address: Crogie, New York
A.B.C. Code

**Plans and specifications for new yachts of any size or type should be prepared now to assure delivery for next year. Have plans of new yachts, all types, on file now.**

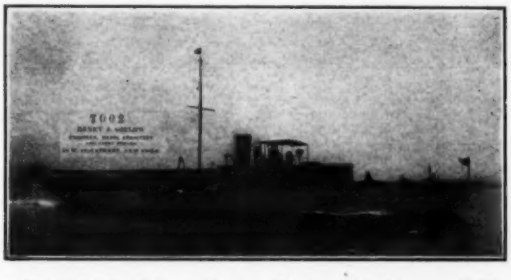
We have a most complete and up-to-date list of steam and motor yachts of all sizes, sail, auxiliary, and houseboats on file in my office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. We are in a position to submit full information on any type of boat upon request.



No. 9597—For Sale or Charter—Handsome 162 ft. seagoing steam yacht, second to none of her size. Finest condition and perfectly appointed. Cruising speed 12 knots. Steel construction, thoroughly overhauled and refitted throughout, 1919. Mahogany and teak trim. Deck dining saloon and music room. Large bridge deck. Two double and four single staterooms, 2 baths. Ice plant, steam heat. Large water supply and liberal cruising radius. Price reasonable for yacht of size and type. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.

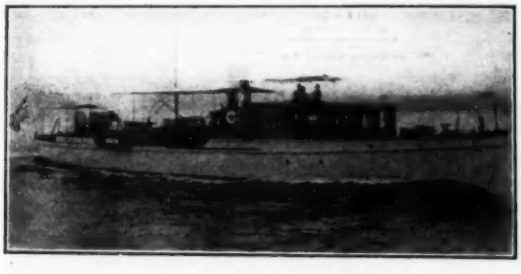
No. 7010—For Sale—Offered at bargain price this 112 ft. twin-screw Lawley motor yacht. 2 deckhouses containing dining saloon and social hall. 2 double and 2 single staterooms, large main saloon, bathroom. Exceptionally well built, able cruiser. In excellent condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.

No. 8080—For Sale—Charter—New modern 85 ft. twin-screw cruising houseboat. Deck dining saloon and galley. 2 double, 3 single staterooms. Hot water heat, 3 baths. Shoal draught makes attractive type Florida cruising. Two 50 horsepower motors give speed 10 miles. Good sea boat. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.

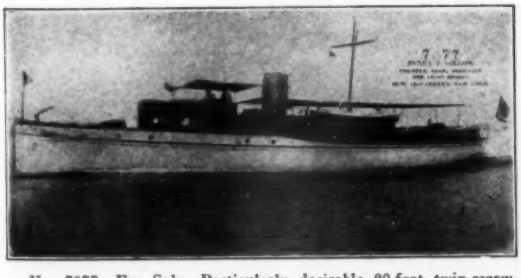



No. 7002—For Sale or Charter—Finest yacht of type available. 138 ft. twin-screw power yacht. Two 300 H.P. Standard engines. Dining room and social hall on deck; three double and one single staterooms; two bathrooms. All furnishings new 1920. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.

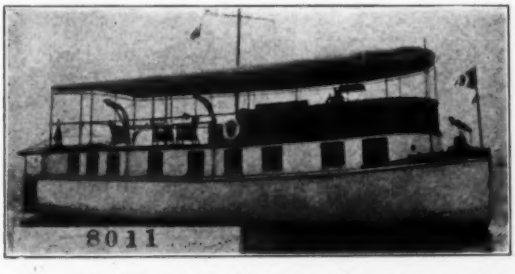
No. 7297—For Sale—Attractive high grade 48 ft. twin-screw express cruiser. New Van Blerck motors and upholstery 1920. Speed 21-24 miles. Excellent sea boat through shoal draught, and desirable for Southern and Northern use. Two cabins and separate galley. Crew forward. Bridge deck enclosed in removable glass partition. Cockpit aft. Modern in all appointments. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



No. 7040—For Sale—Bargain—Modern Lawley built 96 ft. twin-screw motor yacht. 15 ft. beam. Standard motors. Speed 11 miles. Deck dining saloon, 2 double staterooms. Accommodate seven. Economical, can run with 4 crew. Able sea boat. Furnishings new 1919, includes player piano. Large bridge and good deck space. Fine condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.




No. 7077—For Sale—Particularly desirable 80-foot twin-screw power yacht. "20th Century" 50/60 H.P. motors, new 1919. Deck dining room, two double staterooms, bathroom. All furnishings and equipment new 1919. Excellent condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.




No. 8011—For Charter—Most commodious 51-foot cruising houseboat available. Standard motor. Large deck space. Two double and two single staterooms. All good condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.

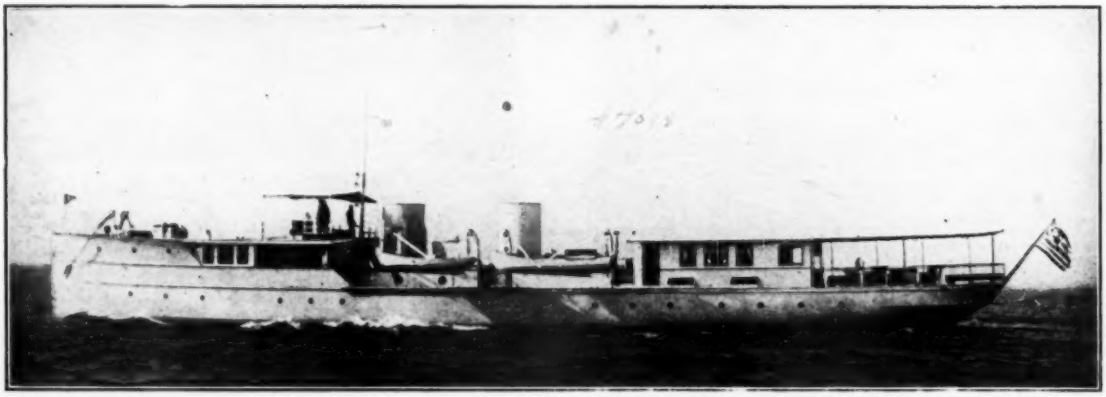
# TAMS, LEMOINE & CRANE

## NAVAL ARCHITECTS AND YACHT BROKERS

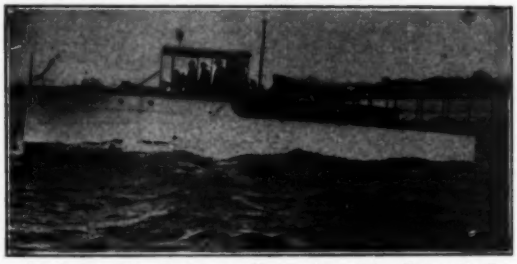
**Telephone 4510 John**

**52 Pine Street New York City**

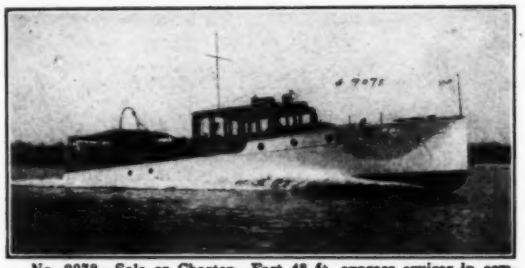
**Offer for sale the following yachts, some of which are available for charter**



No. 7098—Unusual opportunity to purchase the largest cruising steel motor yacht afloat—140 ft. overall—19 ft. 6 in. beam—6 ft. 6 in. draft. Designed by Tams, Lemoine & Crane and built by Lawley. An exceptionally able yacht. Triple screw having three 6 cylinder. Speedway motors. Gasoline consumption low. Speed 16 miles per hour. Large cruising radius. Has very commodious owners' quarters attractively fitted and furnished. In absolutely A-1 shape throughout.

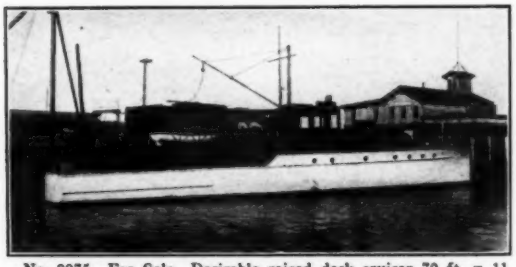


No. 7474—Sale—Brand new fast cruiser; 2-6 cylinder Sterling motors. Speed 21½ miles. All modern conveniences.

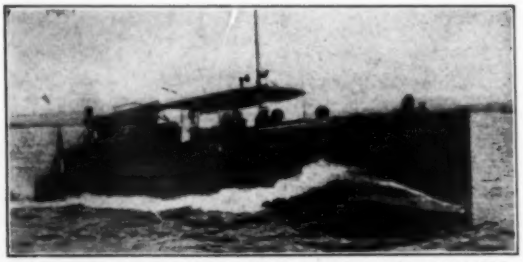


No. 9078—Sale or Charter—Fast 48 ft. express cruiser in commission. Immediate delivery—2 new 6 cylinder Van Blerck motors. Good accommodations. Thoroughly overhauled last year in all departments.

No. 8102—Sale—Charter; most desirable raised deck cruiser available. Practically new. 81 ft. x 13 ft. x 5 ft. draft. Speed 15 miles. Electric light, hot water, heat and refrigerating plant.



No. 9075—For Sale—Desirable raised deck cruiser 70 ft. x 11 ft. x 4 ft. Good accommodations. Speed 23 miles.



No. 8978—For Sale—Raised deck semi day cruiser. 200 H.P. Sterling motor. Speed 20 miles per hour. In the very best of condition. Price reasonable. Full particulars and plans from Tams, Lemoine & Crane, 52 Pine Street, New York.

No. 1927—Sale—Charter—Very desirable, twin screw houseboat; 5 staterooms, 3 bathrooms, dining saloon, lighted by electricity and hot water heat.


*Advertising Index will be found on page 142*

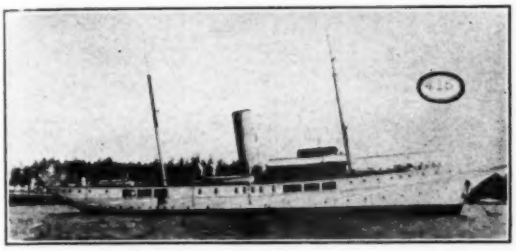
# EDWARD P. FARLEY CO.,

6 N. Michigan Avenue, Chicago, Ill.
Telephone State 6494

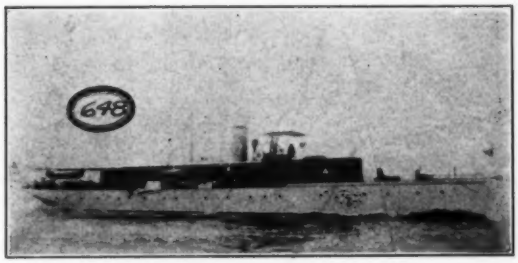
**Naval Architects, Yacht Brokers, Surveying, Marine Insurance**

**We have a complete list of all Steam and Power Yachts, Auxiliaries and Houseboats which are offered for sale and charter**

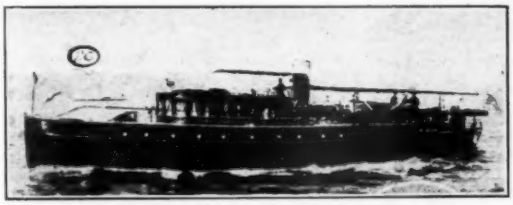
**Plans, Photographs and full particulars furnished on request.**



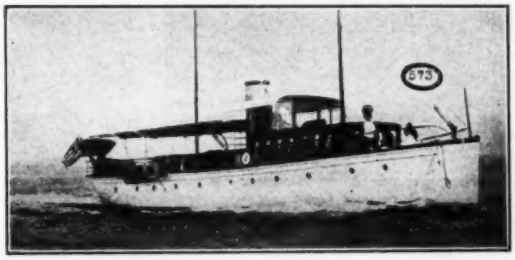
No. 415—For Sale or Charter—Thoroughly modern twin-screw steel steam yacht. 210 ft. x 32 ft. x 13 ft. draft. Recently built in Scotland to Lloyd's highest class. Excellent seaboat. Equipped for extensive cruising. Cold storage, wireless, etc. Cruising speed 11 to 12 knots. Edward P. Farley Company, 6 North Michigan Ave., Chicago, Ill.



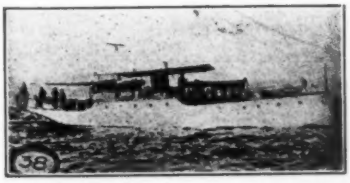
No. 648—For Sale—140 ft. fast twin-screw, steel power yacht. Dining and social hall on deck, three double, one single staterooms, three baths, etc. Excellent condition throughout. Edward P. Farley Company, 6 N. Michigan Ave., Chicago, Ill.



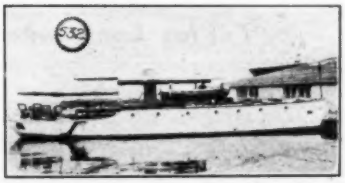
No. 26—For Sale—100 ft. twin-screw power yacht of recent construction and thoroughly modern in all details. Has exceptional accommodations consisting of three double and two single staterooms, dining saloon in deckhouse forward. An able and comfortable cruiser. Edward P. Farley Company, 6 North Michigan Ave., Chicago, Ill.



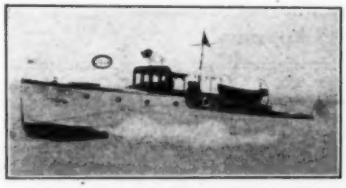
No. 573—For Sale—91 ft. x 14 ft. x 4 ft. 3 in. twin-screw gas yacht. Built 1917. Winton motors. Speed up to sixteen miles. Roomy accommodations with every convenience. In excellent condition. Equipment of the best. Edward P. Farley Company, 6 North Michigan Ave., Chicago, Ill.



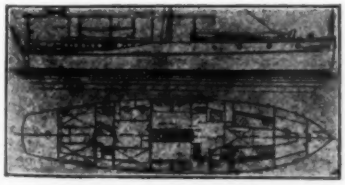
No. 38—For Sale—78 ft. Lawley built cruiser. Winton motor. Two commodious double staterooms. Two toilets. Dining saloon in deckhouse forward. A very able and modern boat. Edward P. Farley Company, 6 North Michigan Ave., Chicago, Ill.



No. 532—For Sale—71 ft. twin-screw flush deck motor yacht. Built by Seabury. Motors controlled from deck. Accommodations consist of one double stateroom, large main saloon, bath, etc. Attractive price. Located Great Lakes. Edward P. Farley Company, 6 N. Michigan Ave., Chicago, Ill.

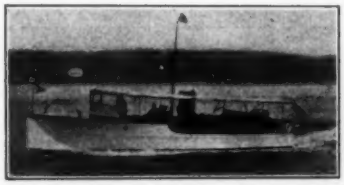


No. 1018—For Sale—54 ft. twin-screw cruiser, express type. Speed 21-24 miles per hour. Two double staterooms, main saloon, two toilets, etc. Complete equipment. Edward P. Farley Company, 6 N. Michigan Ave., Chicago, Ill.



No. 550—For Sale—Raised deck cruiser. 56 ft. x 13 ft. 6 in. x 3 ft. 5 in. draft. Unusually large and comfortable accommodations. Two double staterooms, large main saloon, deckhouse, etc. Finished throughout in the best manner and fully equipped for extensive cruising. Edward P. Farley Company, 6 North Michigan Ave., Chicago, Ill.

No. 451—For Sale—85 ft. x 15 ft. 6 in. x 4 ft. power yacht. Attractively furnished and fitted throughout. Equipped for extensive cruising. Two double and one single staterooms, bath, etc. Has deck social hall. (Located Great Lakes.) Edward P. Farley Company, 6 North Michigan Ave., Chicago, Ill.



No. 1019—For Sale—60 ft. Speedway express cruiser. Excellent seaboat. Speed up to 26 miles per hour. Accommodations excellent. Price reasonable. Edward P. Farley Company, 6 N. Michigan Ave., Chicago, Ill.

HENRY H. JENNINGS HERMAN JAGLE

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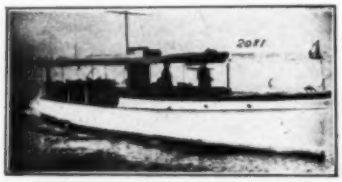
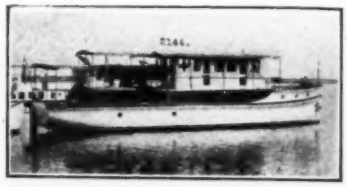


No. 2081—58 foot cruiser. Two double staterooms, main saloon with two Pullman berths, etc. Two toilets. Mahogany finish. 50-54 H.P. Standard motor. Speed up to 14 miles. Electric lights, etc.

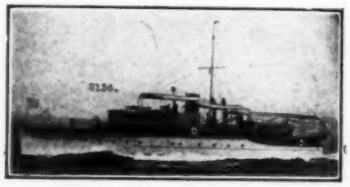
No. 2031—40 foot cruiser, V-bottom. Double stateroom, main saloon with two upper and two lower berths. 60-85 H.P. Sterling motor. Speed 15 knots. Electric lights, etc.



No. 2144—60-ft. yacht. Draft 2 ft. 8 in. Two double staterooms, main saloon, large deck saloon, bath, etc. 60 H.P. Sterling motor. Speed, 10-12 miles.

No. 4322—Sale or Charter—Twin-screw 85 foot power houseboat. Five staterooms, dining saloon, three baths, etc. Speed 10 miles.

No. 2220—30 foot V-bottom mahogany speed launch. Hand design. Six cylinder "E" special Van Blerck motor. Speed 30 miles and over.



No. 2136—Sale or Charter—Twin screw 80 foot power yacht. Two double staterooms, dining saloon, etc. Two 220 H.P. Standard motor. Speed up to 21 miles.

Telephone 1170 Whitehall

Cable Address Windward, N. Y.

Naval Architecture
Marine Insurance
Appraisals

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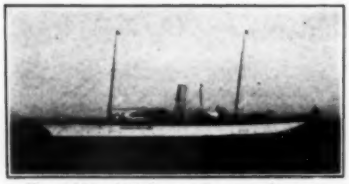
29 BROADWAY NEW YORK

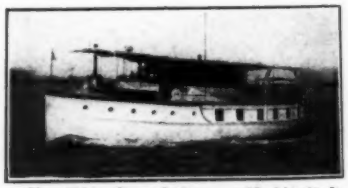
High class yachts of all types for sale and charter; also mercantile vessels of all classes.

*Let us know your requirements*



No. 1236—200 ft. steel sea going steam yacht. Best design and build. A-1 condition throughout. Oil burning. One of the finest vessels in the fleet. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.

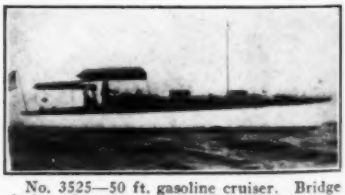
No. 5180—110 ft. gas yacht. Lawley build. Twin-screw. Splendid accommodations. Good speed. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.



No. 4034—One of the new Mathis 61 ft. power house yachts. Unusual accommodations. Standard motor. Exceptional opportunity. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.

No. 4079—70 ft. auxiliary cruiser. Lawley built. Winton engine. Reasonable price. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.

No. 162—60 ft. express cruiser. Recent build. Twin-screw. Speed up to 30 miles. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.



No. 3525—50 ft. gasoline cruiser. Bridge deck. Stateroom and saloon. Speedway motor. Speed over 12 miles. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.

*Advertising Index will be found on page 142*

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# WILLIAM GARDNER & CO.

PHILIP LEVENTHAL
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**Naval Architects, Marine Engineers and Yacht Brokers**

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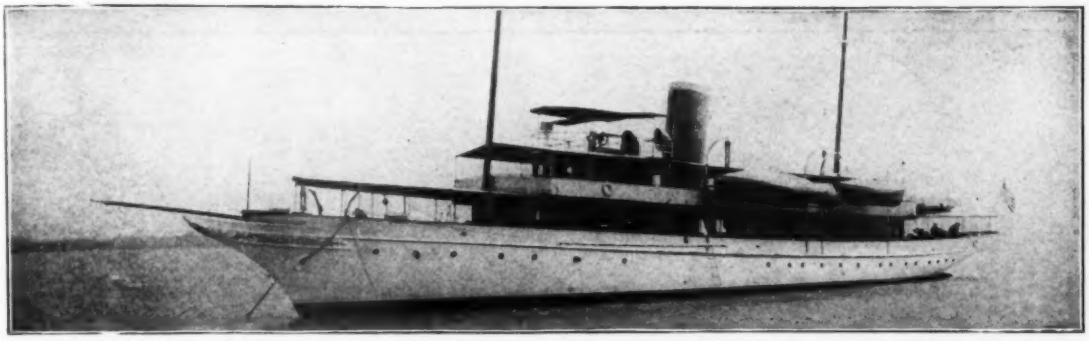
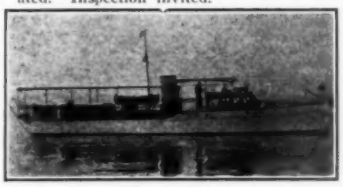
Yachting, N. Y.

We have a complete list of Yachts of every description for sale and charter

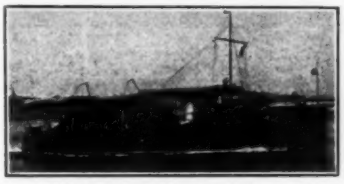
Plans, Photos and full particulars furnished on request



No. 659—Steel steam yacht, deep sea type, 187 x 24 x 10. Of best construction throughout, and of recent build from our designs. Promenade deck full width of boat. Has two large deck houses, with chart house and Captain's room on upper deck. Finely appointed owner's and guests' quarters. Was not used in Government Service. In best possible condition and should be seen to be fully appreciated. Inspection invited.



No. 2456—Able power yacht, twin-screw, 72 x 13.3. Two 6 cylinder Winton motors. Speed 15 knots. Everything first class condition.



No. 2504—Express cruiser, 45 x 10.6, six cylinder Sterling. Speed 14/18 miles. Sleeping accommodations for four, besides crew. A-1 proposition.

No. 2044—Bridge deck cruiser, 63 x 13.6 x 4. Twentieth Century motor, 4 cylinder. Speed 11/12 miles. Attractive interior arrangement.

Telephone
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Yacht Appraiser
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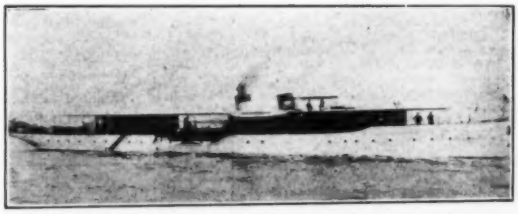
Should you desire to

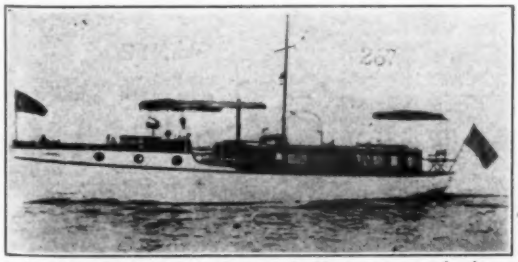
**Buy** **Sell** **Charter** or **Insure**

Communicate with this office. Personal attention, prompt service and a complete list of desirable yachts of all types offered.

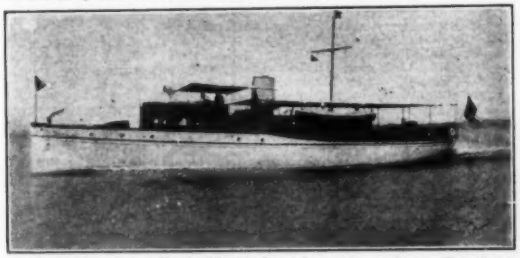
No. 794—Sale—High class 85 ft. twin-screw express cruiser. 5 staterooms, bath, etc. In best of condition. Unusually attractive. Speed 20 miles.



No. 1005—Sale—165 ft. twin-screw oil burning steel steam yacht. Speed 19 miles. 6 staterooms, baths, music room, etc. Beautifully furnished and finished.



No. 267—Sale—51 ft. cruiser. 1 double stateroom and saloon. Standard motor. Speed 11 miles. Price attractive for quick sale.



No. 1034—Sale—Desirable 80 ft. twin-screw cruiser. Speed 14 miles. 2 double staterooms, dining saloon, bath, etc. Excellent condition. One of the finest yachts afloat.

# THE MOTOR BOATING MARKET PLACE

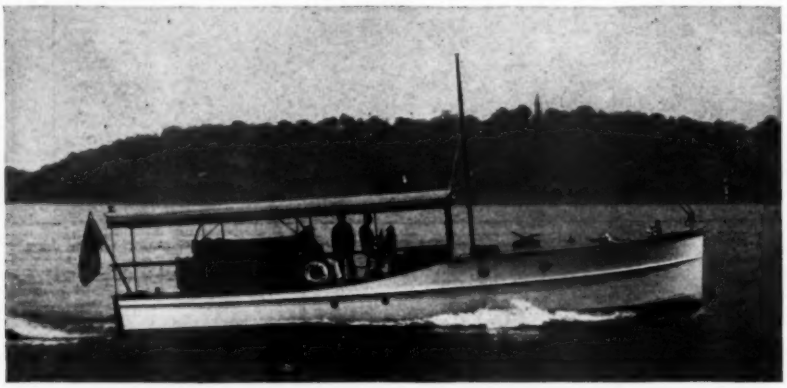
The rate for "For Sale" and "Want" advertisements is 6 cents per word, minimum $1.50. If an illustration is used, the charge is as follows, which includes the making of the cut:

Cut one inch deep, one column wide..... $ 5
Cut 1½ inches deep, 1½ column wide..... $10
Cut 2¼ inches deep, three columns wide..... $20

**Terms: Cash with order.**

## Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.



45 ft. x 10 ft. 6 in. V-bottom express cruiser from design by Wm. H. Hand. Model "FM" 6 Sterling motor. The boat is elaborately finished to the minutest detail. This boat was delivered late last season to a party in Norfolk, Va., but due to an unexpected turn in his finances, we yet have considerable interest in the boat. She is now being offered for sale at a sacrifice price. The outfit is really better than new, as "All Bugs" have been worked out, and you save the 10% Excise Tax. The boat is in commission, and can give demonstrations. Richardson Boat Co., 370 Sweeney St., North Tonawanda, N. Y.

---

Special Lists—Power cruisers, 30 ft. to 50 ft. Aux-yawls, 19 ft. W.L. and up. Aux-schooners, 30 ft. and up. Strong & Beekman, 29 Broadway, New York City.

---

For Sale—33 ft. runabout. Brand new 1920. Cedar planked, full mahogany trim. 25-30 H.P. Buffalo runabout engine. Speed 20 miles. Will sell hull or complete boat. N. Wigglesworth, 60 Wilton Ave., Norwalk, Conn.

---

For Sale—Cabin cruiser—ocean going. Flush deck, 52 ft. x 13 ft. x 3 ft. 6 in. Heavy duty Standard engine. Two lavatories. Two cabins. Mahogany trim. Attractively furnished. One man control. $6,000.00. A. E. Paradine, 38 Munro Pk. Ave., Toronto, Canada.

---

4 H.P. Northwestern, 1 cyl., $55. 6 H.P. Gray, $75. 7½ H.P. Ferro, $75. 12 H.P. Fairbanks, 2 cyl., $55. 12 H.P. Atlantic, $105. 12 H.P. Ferro, 3 cyl. and gear, $135. 3 cyl. 5 x 5 Vim, $165. 150 H.P. 8 cyl., air cooled, $245. 16 H.P. Dunn, 4 cyl., $135. 12 H.P. Continental, 4 cyl., $85. 14 H.P. Wolverine, $185. 60 H.P. Big Four, 4 cyl., 6½ x 8, $485. Many others. We buy and trade motors. Badger Motor Co., Milwaukee, Wis.

---

**EXCEPTIONAL OPPORTUNITY TO BOATMEN**

We take pleasure in announcing that we are placing on the commercial market a limited quantity of Calking Tool Sets, manufactured on contracts for the U. S. Government, which were cancelled upon close of War. By placing an (X) opposite the set desired and tearing out this advertisement attaching to same a small slip with your name and address, we will send you either set at the special price of $5.00—unless a P. O. Money Order accompanies this we shall understand that you wish this set by Express C.O.D.

....Wood Set, consists of six full polished tools as follows: One each, Calking Iron, Making Iron — single crease, Making Iron — double crease, Bent Spike Iron, Straight Spike Iron, Reefing Hook.

....Metal Set, consists of twelve natural finish tools as follows: One each, Flat Chisel, Cape Chisel, Diamond Chisel, Gouge Chisel, Rivet Tool, Side Chisel, Splitting Tool, Calking Tool, Fuller, Butt Tool, Bent Fuller, Bent Splitting Tool. Each Set put up in neat wooden case with sliding top, stained and varnished.

EACH SET IS COVERED BY OUR GUARANTEE THAT IF ANY TOOL PROVE DEFECTIVE IN EITHER MATERIAL OR WORKMANSHIP WE WILL REPLACE SAME UPON RETURN TO US WITHOUT COST. Buffum Tool Co., Louisiana, Mo.

---

Here is an opportunity to purchase at an attractive price a 43-foot Hunting cabin cruiser. Everything in first class condition all ready to go overboard, must be seen to be appreciated. Built by N. Y. Y., L. & E. Co. 24 H.P., 20th Century motor, cedar hull, copper fastened, complete inventory. Inspectable near New York. Full details from W. Roy Halsey, Box 77, Mamaroneck, N. Y.

---

Before buying get our motor and accessory list. For sale—No. 26 Joes reverse gear, Model A Gies gear, new 24 in. x 26 in. 3 blade R. H. Hyde propeller, $30.00, 28 x 36 new 3-blade Hyde propeller, $35.00, 2-Du-4 Model 2 Bosch high tention magnetos, each $20.00. 25 mufflers, 1½ in. Kingston carburetor, $8.00. 1 ton and 2 ton Harrington chain hoist, $40.00 and $60.00. Air tanks, air compressors, 50 volt generator, 60-two and four cycle engines 2 to 60 H.P. Jesiek Boat Company, Grand Rapids, Michigan.

---

Wanted—Foreman of mechanical department, capable of installing high speed power plants, plumbing, electrical wiring and other work of such character in modern pleasure cruisers. State experience and salary expected. Box 95, MoToR BoatinG.

---

Wanted—Cabin cruiser to accommodate four. Give dimensions, condition, equipment, price, speed. Must be seaworthy. W. B. Forman, Canajoharie, N. Y.

---

For Sale—1920 practically new 36 foot Elco mahogany express runabout. Will consider offer, or trade for high grade car. Rolls-Royce or late model Locomobile or Pierce-Arrow preferred. Address H. F. Keil, Jr., 401 East 163rd St., New York City.

---

For Sale—Two cylinder, 36 H.P., two cycle Kahlenberg engine. A-1 condition. Complete with spare parts, clutch, shaft, stuffing box, propeller. Box 91, MoToR BoatinG.

---

For Sale—Boat building, repairing, winter storage yard. New building shop, 2 railways, boats, 1½ ton truck. New 7 room residence, all improvements, furniture, electric washer, ironer, grill, sweeper. Near 2 yacht clubs, 25 miles New York. Part cash. Owner going to Pacific coast. Address Boat Yard, care of MoToR BoatinG.

---

75 horsepower four cylinder four cycle marine engine, weight 1200 pounds. Fine condition. Bosch magneto. Suitable for express cruiser or runabout, $250.00. Reliance Motor Boat Co., 207th St., West of Broadway, N. Y. C.

---

For Sale—One 4 cylinder 30 horsepower Frisbie motor, used approximately 70 hours. In perfect condition. Address Box 90, c/o MoToR BoatinG.

---

For Sale—Peerless 4 cylinder motor, 5 bore, 6 stroke. Electric self-starter. Full equipment. Only used two seasons on fresh water. Guaranteed first class condition. Asking $550.00. Will consider reasonable offer, or exchange for 90-100 to 150 H.P. motor, Sterling or Van Blerck preferred with electric starter. Must be in first class condition. J. A. Mellish, St. Hubert Hotel, 120 West 57th St., New York.

---

For Sale—90 H.P. 8 cylinder, V type Curtiss airplane motor, 4 bore, 5 stroke. Berling magneto, Zenith carburetor. Make wonderful motor for light runabout or hydroplane. I guarantee this motor in first class condition; only used about twenty hours in airplane. Weight 450 lbs. Asking $600.00. Make offer. W. J. Herbert, 530-532 West 44th Street, New York City.

---

For Sale—New round bottom raised deck hull, 28 ft. x 8 ft. Very strong. Cedar planking, oak frame. Ready for engine. Mattituck Boat Works, Mattituck, N. Y.

---

For Sale—Attractive motor boat with glass cabin, 28 ft. x 7½ ft. Thoroughly seaworthy. Copper fastened, having toilet, galley. 2 cyl. 8-10 H.P. Lathrop smooth running motor, and row boat. Price $500. Charles Schreiner, Williamsburgh Yacht Club, College Point, L. I.

---

Wanted—Cruiser about 35 ft. overall. Must have good four cycle, four cylinder engine. Send full description and lowest cash price for delivery on Lake Erie. Address Box 92, MoToR BoatinG, New York City.

---

Wanted—Center board cabin yawl, about 25 ft. or cat or sloop, with small engine. Reasonable, state price, age and condition. B. M., 780 Rogers Ave., Bklyn., N. Y.

---

**Auto Motor Supplies—Buick—Michigan—Stoddard Dayton—Cadillac—Overland—E.M.F. Continental and Buda Motors, all types $50 each and up. Special high tension 2 and 4 cylinder Magnetos $9.50 each. Electric and Gas Head Lamps—Cells—Carburetors — Air Compressors—Generators—Starters, etc. Write for late catalogue. Address Motor Sales Dep't. B, West End, Pittsburgh, Pa.**

---

## Look What's Here

Received too late to furnish description and photo, but if interested in any kind of a boat—see us first—we have it.

### FOR SALE

**Two glass cabin boats, 28′ and 33′.**
**One 45′ and one 50′ Raised Deck Cruisers.**
**One 100′ Raised Deck Cruiser.**
**One 98′ Elco Cruiser.**
**One 108′ Cruising Yacht.**
**Two Houseboat Cruisers, 85′ and 100′.**
**One 90′ Steam Yacht.**
**One 85′ Auxiliary Schooner.**

### WANTED

**Auxiliary Cat Boat, 20 to 30′.**
**Schooner suitable for Yacht, no motor.**
**Two open launches, 28 to 40′.**

***Get in touch with "Boat Headquarters in Baltimore"***

**STALEY'S YACHT AGENCY**
**106 N. Charles St. Baltimore, Md.**

*Advertising Index will be found on page 142*

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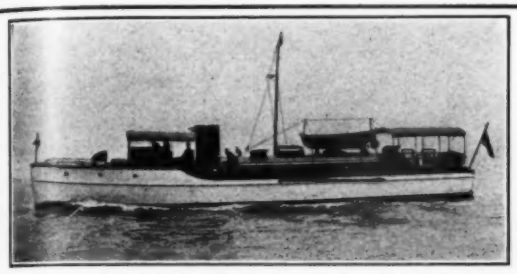
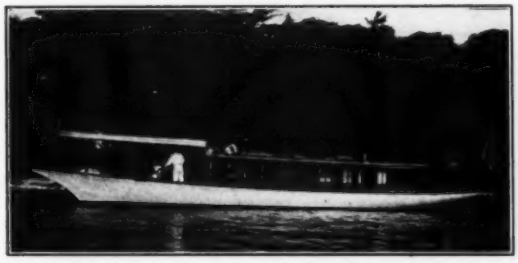


For Sale—Yacht Celeritus, 61 ft. O. L. x 11 ft. 6 in. x 3 ft. 9 in. Designed by Swasey. Built by Jacobs 1916. Redesigned 1919. Motors overhauled 1920. Power plant, two Sterling eight cylinders 150/200 H.P. each. New power dinghy built 1920. Perfect order. Complete inventory. Price low. Apply Oliver, 417 Canal Street, New York.



For Sale—Used 55 by 11 cruiser, equipped with 50 H.P. heavy duty Sterling motor. Speed 12 miles. Accommodations for party of four with galley, toilet, large forward deck and covered after cockpit. Price $4,000.00. Rochester Boat Works, Inc., No. 10 Charlotte Station, Rochester, N. Y.

Now is the time to build that boat. You can secure a set of large scale blue prints for any of the popular boats, Chum, Nomad, Porpoise, or Shrimp designed by Wm. J. Deed and published in MoToR BoatinG at moderate cost by writing to F. W. Horenburger, 63 W. 184th St., New York, N. Y.

The Watercar—An ideal combination fast runabout and week-end cruiser. Call and see it before buying a boat. Bronx Boat Works, foot Willow Ave. (near E. 132nd St.), New York. Hulls only or complete outfits.

For Sale—1 single cylinder (4 H.P.) new Cady motor boat engine. Price $55 to first cash buyer. Box 97, MoToR BoatinG.

For Sale—New 18 x 24 bronze two blade propeller wheel, bored for 1 in. shaft. Harry Boyce, 156 E. 184th St., New York City. Phone Fordham 8487. Apt. "J."

Wanted—Boat shop, completely equipped, within fifty or one hundred miles from New York City. Send full particulars by mail. Box 99, MoToR BoatinG.

Wanted—Engineers position. 12 years experience. Could take charge of 50 footer. H. F. H., care of MoToR BoatinG.

For Sale—Ferro, single-cylinder engine. Four H.P., with reverse gear, coil and propeller. Mechanical condition guaranteed. $65.00 for quick sale. Dr. Ferstenberg, Clinton, Iowa.

For Sale—40 ft. x 10 ft. raised deck cruiser, twin-screws, shallow draft. Very seaworthy. Two 60 H.P. J.V.B. engines, highly finished. Mahogany trimmings. First class condition guaranteed. Sleeps four. Speed 22 M.P.H. Price $8000.00. Ventnor Boat Works, Aves. 5th and C (Ventnor Heights), Atlantic City, N. J.

Cabin cruiser—Built by Stearns & McKay, Gloucester, Mass. Length 27 ft.; 30 H.P. Mahogany trimmings. Gray motor. Electric lighting and starting. Fitted with toilet, wash-basin, ice-box, oil-stove, and cabin and cockpit seat cushions. Built 1915 and very little used. Speed 12 to 14 miles per hour. At Bearse's Ship Yard & Marine Railway, Chatham, Mass. Name: "Anne." Address, Mr. Bearse.

# REBUILT ENGINES

## TO POWER YOUR WORK BOAT, YACHT, CRUISER OR TENDER

GLOBE, 4 cyl., 4 cycle, 100 H.P., Bore 10", Stroke 14". Complete with reverse gear, 48" propeller, Bosch magneto. Weight 8000 lbs. Price.....$3000.00

STANDARD, 300 H.P. reversible type, complete with 6 new cylinders. Bore 12", stroke 14". Two new K.W. auxiliaries, 1 cylinder, 4½" bore, 4½" stroke. Shafting and propeller. Cost new, $25,000.00. For quick sale will make bargain figure. We have a pair of these engines and will also make special quotation on the pair. Price (one engine).....$4000.00

CRAIG, pair of 4 cylinder, 100 H.P., 11"x14", both with full outfit including reverse gear and propellers. Price (pair).....$4600.00

STANDARD, 4 cylinder, 4 cycle, 6" bore, 8" stroke. Full outfit. Cost new, $3795.00. Weight 3200 lbs. Price.....$1160.00

WOLVERINE, 42 H.P., bore 8½", Stroke 9", Bosch magneto, Wolverine reverse gear, 36" propeller, all fittings complete from flywheel to coupling.....$1200.00

AUTOMATIC, 50 H.P., Bore 7½", stroke 9". Complete with reverse gear, 36" propeller, Bosch magneto and dual system. Weight 5000 lbs. Price.....$1460.00

HOLMES, 24-30 H.P., Bore 5", stroke 6". Same outfit as above. Price.....$460.00

HOLMES, 24 H.P., Bore 5", stroke 6½", 4 cylinder. All complete, propeller. Price.....$460.00

SPEEDWAY, 24 H.P., Bore 4½", stroke 5". Same outfit as above. Price.....$460.00

STERLING, 12 H.P., Bore 5½", stroke 7". All complete with magneto and propeller. Price.....$450.00

24-27 H.P., 3 cylinder, 4 cycle, 6"x8". Complete with all fittings, including propeller. Weight 1800 lbs. Cost new $2024.00. Price.....$760.00

| Engine | H. P. | R.p.m. | Cyl. | Cyc. | Bore & Stroke | Spark | Gear | Prop. Ins. | Wght. | Price |
|---|---|---|---|---|---|---|---|---|---|---|
| Fairbanks-Morse | 20 | 400 | 2 | 4 | 6x6 | H.T. | Own | 26 | 1800 | $ 460 |
| Craig | 300 | 275 | 6 | 4 | 11x14 | M.&B. | Own | 52 | 8000 | $2600 |
| Craig | 100-125 | 600 | 6 | 4 | 6½x7 | M.&B. | Own | 32 | 2800 | $1600 |
| Craig | 18-21 | 400 | 3 | 4 | 5x6 | H.T. | N.Y. | 24 | 1600 | $ 400 |
| Jager | 40 | 500 | 6 | 4 | 5x6 | H.T. | Joes | 28 | 1800 | $ 600 |
| Anderson | 12-14 | 475 | 2 | 4 | 5x6 | H.T. | N.Y. | 22 | 900 | $ 400 |
| Wolverine | 14-18 | 475 | 2 | 4 | 6½x7 | M.&B. | Own | 28 | 2000 | $ 660 |
| Globe | 50 | 350 | 4 | 4 | 8x10 | H.T. | Own | 38 | 4000 | $1200 |
| Automatic | 37½ | 375 | 3 | 4 | 7½x9 | H.T. | Own | 36 | 3600 | $1060 |
| Peerless | 16 | 500 | 2 | 4 | 5¾x7 | H.T. | Own | 22 | 600 | $ 300 |
| Peerless | 12-12 | 500 | 2 | 4 | 5x6 | H.T. | Joes | 18 | 360 | $ 200 |
| Eagle | 24 | 450 | 3 | 4 | 6x7 | H.T. | Own | 28 | 1400 | $ 560 |
| Seitz | 40-50 | 450 | 4 | 4 | 6x6½ | H.T. | Joes | 30 | 1800 | $ 600 |
| The Pair | | | | | | | | | | $1160 |
| Buffalo as is | 24 | 450 | 4 | 4 | 5½x6 | H.T. | Own | 26 | 1600 | $ 200 |
| New York | 40 | 400 | 4 | 4 | 5½x7 | Own | Own | 28 | 1800 | $ 600 |

**Two Cylinder, Two Cycle, Reversible Type Standard Make Engines**

| Engine | H.P. | Prop. Inches | Reverse Gear | Ignition | Wght. | Condition | Price |
|---|---|---|---|---|---|---|---|
| Lathrop | 24 | 30 | Paragon | M.&B. | 2000 | Equal new | $360.00 |
| Lathrop | 20 | 28 | Paragon | M.&B. | 1800 | Equal new | $346.00 |
| Lathrop | 16 | 26 | Paragon | M.&B. | 1200 | Equal new | $300.00 |
| Lathrop | 14 | 24 | Paragon | M.&B. | 1000 | Rebuilt | $280.00 |
| Lathrop | 12 | 22 | Paragon | M.&B. | 800 | Rebuilt | $260.00 |
| Mianus | 20 | 28 | Joes | J. Sp. | 1600 | Like new | $360.00 |
| Mianus | 15 | 24 | No | M.&B. | 1000 | Rebuilt | $260.00 |
| Mianus | 10 | 21 | Joes | M.&B. | 700 | Like new | $260.00 |
| Mianus | 10 | 21 | No gear | M.&B. | 560 | Rebuilt | $200.00 |
| Mianus | 10 | 21 | No gear | M.&B. | 560 | Rebuilt | $176.00 |
| Mianus | 8-10 | Old style | No gear | M.&B. | 560 | As is | $100.00 |
| Fulton | 15 | 22 | No gear | J. Sp. | 560 | Rebuilt | $186.00 |
| Fulton | 15 | 22 | Joes | J. Sp. | 650 | Rebuilt | $260.00 |
| Knox | 15 | 24 | No gear | M.&B. | 760 | Rebuilt | $246.00 |
| Ferro | 15 | 22 | Ferro | J. Sp. | 560 | Rebuilt | $236.00 |
| Bridgeport | 9 | 18 | No gear | M.&B. | 400 | Rebuilt | $200.00 |
| Palmer | 10-12 | 20 | No gear | M.&B. | 500 | Rebuilt | $226.00 |
| Brown | 10 | 18 | No gear | J. Sp. | 360 | New | $160.00 |
| Eddy Globe | 13 | 22 | No gear | J. Sp. | 600 | As is | $100.00 |

*We have a large stock of one and three cylinder, two cycle engines ready for shipment within 48 hours after notice. One cylinder engines with full outfit, complete from flywheel to coupling, at $15.00 per horsepower. Extra charge for shafting. Our prices are right in comparison to other rebuilt engines.* ALL ENGINES F. O. B. NEW YORK For Immediate Service Remit Certified Check

**Hamilton Marine Engine Exchange, Inc.**
440 Fifty-Second Street, *One Block from 4th Ave. Subway Station* Brooklyn, N. Y.
*AGENTS FOR KNOX COMMERCIAL MOTOR*

# THE MOTOR BOATING MARKET PLACE

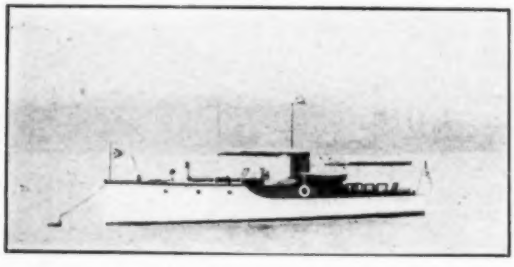
The rate for "For Sale" and "Want" advertisements is 6 cents per word, minimum $1.50. If an illustration is used, the charge is as follows, which includes the making of the cut:

Cut one inch deep, one column wide..... $ 5
Cut 1½ inches deep, 1½ column wide..... $10
Cut 2¼ inches deep, three columns wide..... $20

**Terms: Cash with order.**

## Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.



For Sale—Fifty-foot bridge-deck Hand V-bottom cruiser with 4 cylinder 4 cycle 40-60 horsepower Buffalo motor. Separate electric light plant; large bathroom, with hot and cold running water. Large forward stateroom sleeping four; engine room sleeping two. Interior finish mahogany and white enamel. Boat built in 1918. Used very little, in excellent condition and practically ready to go into commission. Complete equipment including round bottom dinghy. Speed 12 miles per hour. Room 875, Woolworth Bldg., New York City. No dealers.

No. 1906—For Sale—V bottom express runabout, 30 ft. x 6 ft. 6 in. x 2 ft. Built 1916 and very lightly used. Mahogany planked; copper fastened. 100 H.P. Sterling with starter. Has been run at 30 miles in rough water and proved able and easily handled. Engine very reliable. seats 7. New storage battery. Refinished 1920. A-1 condition throughout. Apply John G. Alden, 148 State St., Boston.

No. 1746—For Sale—High grade day cruiser, 30 x 9 x 3 ft. Built 1918 by Crosby and little used. 40 H.P., 6 cylinder Scripps. Speed 10-14 miles. Cabin with 2 transom berths and toilet. Large, comfortable cockpit with chairs and cross seat. Mahogany finish; brass fittings. Apply John G. Alden, 148 State St., Boston, Mass.

Wanted—Cruiser 45 to 60 feet long. Must be first class boat. Speed 12 miles or over. Send me particulars. L. Cook, 1918 Sunnyside Ave., Chicago, Ill.

KERMATH MOTORS—WE WILL TAKE ANY MOTOR IN TRADE ON A NEW KERMATH. GET OUR SECOND HAND LIST. KERMATH MFG. COMPANY. (Detroit, Mich.)

Canada's exclusive wholesale and retail marine engine jobbers. Dominion's Largest Distributors. Free illustrated catalog, showing over fifty manufacturers' products. Canadian Boat and Engine Exchange, Ltd., Toronto, Canada.

For Sale — A 40 ft. raised deck cruiser complete to the minutest detail with every possible convenience. Double stateroom and saloon sleeping five or six. Price $3,000. Cannot be duplicated for double. For complete description address Yachting, c/o MoToR BoatinG.

Live salesman wanted to sell DeForest radio apparatus to boat builders and owners. Established company, wonderful and much desired line and chance to make substantial commission. Address: DeForest Radio Tel. & Tel. Co., 1415 Sedgwick Ave., N. Y. C.

Wanted—Cruiser 40 to 60 ft. State all particulars in first letter and lowest price. Address Kirkland Studio, 414 West Federal St., Youngstown, Ohio.

Wanted—2 cyl. 3 H.P. Koban Outboard engine. In reply, state full particulars as to condition. Year manufactured, make of carburetor, and lowest price for cash to Box 11, MoToR BoatinG.

**TRIMOUNT WHISTLE BLOWER OUTFITS**

Blower runs by friction contact with engine flywheel. Whistle of brass, nickel-plated.

Made in 3 sizes.

**TRIMOUNT ROTARY HAND BILGE PUMPS**

All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.

Made in 3 sizes.

**TRIMOUNT ROTARY POWER CO.**

20 Heath Street Boston, Mass.
(Factory: 292 Whiting Ave., E. Dedham, Mass.)

Cape Cod—Seagoing (1917) houseboat cruiser. 18 Standard engine under bridge deck. Toilet room; large galley. Three berths forward, three berths aft. Headroom cabins. Comforts fifty footer. Family 4 cruised six months Southland. Bound North. Can be seen and inspected "Widow's-Cove," Greenport, N. Y. Price $3,000.00 cash. Eugene Rosemond, "Widow's-Cove," Greenport, N. Y.

For Sale—Several mushroom anchors, red leaded, weight 156 lbs. Net. $12.50 each f.o.b. Washington, D. C., Percy M. Child, 1110 14th St., N.W.

For sale—1 pair Bausch & Lomb prism binoculars, 6 by 30 power. Just the thing to complete your motor boat equipment. Buy now for next season. Percy M. Child, 1110 14th St. N.W., Washington, D. C.

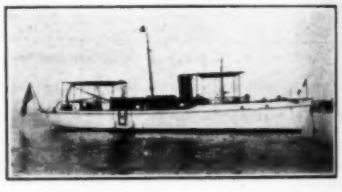
For Sale—1 2 KW. direct connected Carlisle & Finch electric outfit, with arc search lamp. Percy M. Child, 1110 14th St., N.W., Washington, D. C.

For Sale—40 ft. 5 in. x 6 ft. 9 in. mahogany runabout "Chinook", speed 25 M.P.H. Equipped with six cylinder 5½ x 6 Van Blerck engine, electric starter, generator, electric lights, windshield, upholstered seats, top and curtains. Boat is in excellent condition and immediate shipment can be made to any point desired. Value $7,500.00; will sell for $5,000.00. Address Winton Engine Works, Cleveland, Ohio.

Wanted—20 to 25 foot runabout with speed of twenty miles or more. Must be in good condition and right price for cash. What have you? Address G. P. Blackiston, Canton, Ohio.

Bargains—Brand New Engines—Following engines guaranteed brand new. Offered practically as cheap as second hand engines. 4 brand new Peerless 25-35 H.P., complete equipment, electric starting lighting, enclosed flywheel, magneto, carburetor, lubricator, reverse gear, kerosene attachment, propeller, shaft, stuffing box, stern bearing. Boxed for shipment. Suitable for cruiser or workboat. 3 brand new Van Blerck 8 cylinder 6 in. x 6 in., 150 H.P., 950 revolutions, complete engine equipment, electric starting lighting, storage battery, extra kerosene carburetor, governor, etc. Boxed for shipment. 2 brand new Skandia oil engines, 120 H.P., two cylinder, 200 revolutions, reverse gear. Suitable for workboat, auxiliary or heavy cruiser. Write for specifications and prices. Louis C. Eitzen, 280 Broadway, New York, N. Y.

For Sale or To Let—A modern boat plant, with complete machine shop, two marine railways, three gasoline stations. Best location in America, near New York. Address, Paine Statistical Corporation, 756 Broad St., Newark, N. J.



No. 477—For Sale—Handsome Lawley built cruiser, 50 ft. x 10 ft. x 3 ft. 9 in. Thoroughly overhauled 1920 and put in best possible condition. 40 H.P., 4 cylinder Sterling engine practically rebuilt this Winter by Sterling Company. 2 berths and toilet forward, galley and engine room next aft, 3 berths in saloon, large toilet. Roomy bridge deck. 10 ft. cockpit aft. This boat was not in Government service. Apply John G. Alden, 148 State St., Boston, Mass.

# LAST CALL

## Loew-Victor and Duesenberg Parts

**We will discontinue all service on these motors May 1, 1921, after which date no parts will be available.**

**All owners are advised to purchase their probable future requirements of spare parts from us immediately.**

**ACT QUICKLY to avoid disappointment, and state what you need in first letter as remaining stock is held subject to prior sale and is moving fast. Prices on application. Address**

**Dept. 86**
**WILLYS CORPORATION**
**Elizabeth, N. J.**

*Advertising Index will be found on page 142*

# Rebuilt Motors

*The Engine You Want at the Price You Want to Pay*

We carry in stock inboard and outboard motors ranging from 1 to 600 H.P., of all types. These machines are honestly rebuilt in our own shops and sold with an IRON-CLAD GUARANTEE. We recently announced a reduction of 20% of the price of these engines, which brings the prices in most cases down to about *40% of Their Original Cost.*

*Write us for our Bargain List — it will be sent anywhere on request.*

**BRUNS, KIMBALL & CO.**

153-155-157-159 West 15th Street New York City

We also are distributors of and carry a stock of the following NEW motors—the finest built in this country—

| | | | |
|---|---|---|---|
| Sterling | Kermath | Murray & Tregurtha | Missouri |
| Gray-Prior | Peerless | Wolverine | Roberts |
| Hartford | Waterman | Doman | |

"MORETON GUARANTEED"

## Rebuilt Engines—

¶ Sterling, pair 6 cyl., Mod. FM 125 h.p. Dual 2-spark magneto, electric starter, reverse gear.

¶ Sterling, pair 8 cyl., Mod. FS, 200 h.p. Dual 2-spark magneto, electric starter, reverse gear.

¶ Sterling, pair 8 cyl., Mod. R-188, overhead valve, magneto, distributor, electric starter, reverse gear. Make best offer, anything reasonable considered for quick sale.

The above engines will be sold separately or in pairs.

¶ Van Blerck, 8 cyl., Mod. M, 200 h.p.; practically brand new, used only a few times.

**WALTER H. MORETON CORP.**

214 STATE ST., BOSTON, MASS.

"Have you our rebuilt list? It is worth asking for."

## NOT REBUILT

Not having sufficient space in our warehouse and in order to make room for our new stock of engines we offer the following second hand machines for sale at bargain prices, this is an opportunity for persons who desire to do their own repairing.

| NAME | BORE | STROKE | CYCLE | H. P. | CYLS. | PRICE |
|---|---|---|---|---|---|---|
| Mason-Jager | 6¾" | 8" | 4 | 20 | 2 | $225.00 |
| Ralaco | 4 3/16" | 6" | 4 | 10 | 2 | 150.00 |
| Truscott | 5½ | 6" | 4 | 24 | 4 | 250.00 |
| Palmer | 5" | 6" | 4 | 20 | 4 | 150.00 |
| Carlson | 4⅝" | 4½" | 2 | 20 | 4 | 175.00 |
| Lachawanna | 4" | 4½" | 2 | 8 | 2 | 40.00 |
| Erd | 4½" | 5" | 2 | 10 | 2 | 75.00 |
| Stanley | 5½" | 6" | 2 | 14 | 2 | 100.00 |
| Mianus | 5½" | 6" | 2 | 15 | 2 | 100.00 |
| Palmer | 4½" | 4½" | 2 | 4 | 1 | 40.00 |
| Reliance | 5" | 5½" | 2 | 18 | 3 | 75.00 |
| Palmer | 3¾" | 3½" | 2 | 2½ | 1 | 30.00 |
| Hubbard | 4½" | 5" | 2 | 4 | 1 | 40.00 |
| Eagle | 5" | 5" | 2 | 10 | 2 | 60.00 |
| Koban | outboard motor | | | | | 35.00 |
| Evinrude | outboard motor | | | | | 45.00 |

**RAPP-HUCKINS COMPANY, Inc.**

"Established 1900"

DISTRIBUTORS FOR

"PALMER", "BUFFALO", "HALL-SCOTT" MOTORS, "PARAGON" REVERSE GEARS AND "CAILLE" ROW-BOAT MOTORS.

We carry a full line of accessories.

59 Haverhill Street, Boston, Mass.

## USED STERLING ENGINES

ONE OR PAIR FM eight cylinder 170 H. P. 5½" bore 6¾" stroke Motors. Full equipment including Tachometers, Bosch dual two Spark Magnetos, Bosch Starters and Generators. Completely overhauled and in excellent running order.

Price $2250. each, cars Buffalo, N. Y. where motors are stored.

**HALL SCOTT MOTOR CAR CO. INC., BUFFALO, N. Y.**

## Rebuilt Marine Engines

IN CHICAGO

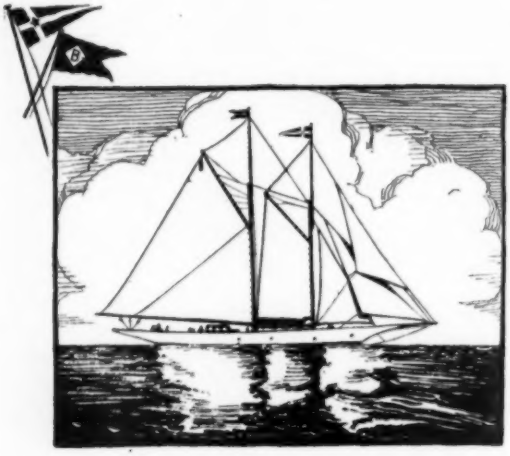
These engines are completely overhauled, rebuilt and refinished by our marine engine experts. Look like new, run like new, and are thoroughly guaranteed. Here's a chance to get a high-grade motor at a big saving.

Our present stock includes Sterlings, Domans, Grays, Buffalos, etc., taken in trade for new engines. Write today for latest list if you want a real bargain.

**W. L. MASTERS & COMPANY**

231 North State Street Chicago, Illinois

Agents for Sterling, Scripps, Frisbie, Kermath, Universal, Gray & Evinrude Motors.
New engines and repair parts always in stock.



# FOR SALE

**THE fastest seagoing schooner** (of its size) in the United States, this beautiful copper bottomed 100-footer was built by Fife of Scotland of teakwood from rail to keel and has crossed the Atlantic three times. Interior is finished in finest mahogany. Large staterooms and 2 bathrooms. Has two suits of sails (one of heavy flax for ocean use), and is well outfitted. Now in perfect order. Ready for inspection near New York.

***Would cost $250,000 to build today***

**Price for quick sale, $50,000**

**Address**

**Redfield Advertising Agency**

**34 West 33rd Street New York City**

# Rebuilt Engines

## All Guaranteed in Good Running Condition

1 R.H. and 1 L.H. 5¾" bore, 7" stroke, Wisconsin marine motors. Complete with ignition, carburetion, and Seabury reverse gears.
Price—$5,000 for the pair.

1 R.H. and I L.H. 3-cylinder 7½" bore, 9" stroke, Automatic heavy duty motors. Complete with propeller shafts, propellers, and propeller equipment.
Price—$850 each or $1,700 for the pair.

1 R.H. and 1 L.H. 8-cylinder 6¾ x 7¾ Duesenberg high speed marine motors. These motors are complete with standard equipment.
Price—$5,000 for the pair.

1 R.H. and 1 L.H. 8-cylinder Model F-300 Sterling engines. Complete with standard equipment.
Price—$3,500 each.

1 4-cylinder 28 H.P. Clifton marine engine. Equipped with imported Bosch magneto.
Price with standard equipment—$1,000.

1 50-Light Murray & Tregurtha direct connected set.
Price—$250.

1 Model F M 8-cylinder 5½ x 6¾ Sterling engine. New. Has Bosch electrical and ignition equipment. Engine complete with propeller equipment.
Price—$2,500.

1 R.H. and 1 L.H. 6-cylinder 6½" bore, 8" stroke, open base Murray & Tregurtha engines.
Price—$3,000 each.

1 Model F-4 4-cylinder 7½" x 10" heavy duty M. & T. engine.
Price—$2,500.

1 4-cylinder 6½" bore, 9" stroke, old style 20 H.P. M. & T. engine.
Price—$700.

1 R.H. and 1 L.H. 4-cylinder 6½ x 8 Model E-4 M. & T. engines.
Price—$1,400 each.

1 4-cylinder 8½" bore, 11" stroke, 60-80 H.P. M. & T. rebuilt engine.
Price—$3,000.

1 Universal 37 Ampere direct connected light set.
Price—$250.

1 Herrischoff steam plant.
Price—$2,800.

**All Engines Subject to Prior Sale**

**MURRAY & TREGURTHA CORPORATION**

**Atlantic Massachusetts**


*Advertising Index will be found on page 142*

NAVAL ARCHITECTS & YACHT BROKERS

JOHN G. ALDEN
YACHT BROKER AND NAVAL ARCHITECT
MARINE INSURANCE
148 State Street
BOSTON, MASS.

Thomas D. Bowes, M. E.
NAVAL ARCHITECT AND ENGINEER
Offices:
Lafayette Bldg., Chestnut and Fifth Sts.
PHILADELPHIA, PA.

COX & STEVENS
Engineers and Naval Architects
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15 WILLIAM STREET, NEW YORK CITY
TELEPHONE 1378 BROAD

WAVE COLLECTING
Runabouts—Rowboats—Cruisers
SPECIAL 17' HYDROPLANE
Build your own boat from my plans, full size paper patterns or semi-erected frames.
17 years' practical experience
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NAVAL ARCHITECT
NEW BEDFORD, MASS.
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Send stamps for latest catalog.

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NAVAL ARCHITECTS
SURVEYORS — YACHT BROKERS

CHARLES D. MOWER
Designer of
SENSIBLE CRUISERS
POWER—SAIL—AUXILIARY
Twenty-five years' practical experience
347 Madison Avenue New York City

## *Locate the Pivoting Point*

(*Continued from page 29*)

center line is usual, and in no case need it exceed 45 degrees. A rudder at 90 degrees to the center line offers great resistance to forward motion, but very little turning moment. Fit hard-over stops, which the tiller or quadrant will bring up against at whatever angle you may determine as suitable. Three stops are particularly valuable when going astern. The rudder stock should be vertical for best results. Third; the rudder should be as far aft as possible thereby the greatest turning moment is produced. Never should the rudder be forward of the propeller as is sometimes seen. This of course does not refer to out and out racing machines with the bow rudder. Fourth; A propeller away aft makes a hard turning boat, she will do better with the propeller as far forward as possible. Fifth; shape of rudder. If there is a skeg providing a lower bearing, make the rudder as deep as possible. A deep narrow blade is more effective than a shallow wide one, of an equal area, if the lower bearing is fitted. The balanced type is to be preferred, and 20% of the total area should be forward of the rudder stock. If no lower bearing is provided the rudder cannot be so deep, as it will chatter. The lower forward edge should be well rounded. If the above requirements are filled, your boat should steer quickly and easily. If she is slow and heavy you must expect her to turn slow. As a last resort increase the rudder area, above what is general practice. If you have a solid deadwood on your boat, it can be cut down. This will do the trick if everything else fails. All trailing edges should be well rounded, so the flow of water to the propeller and rudder will not be impeded. C. L. B., Brooklyn, N. Y.

FREDERIC S. NOCK
NAVAL ARCHITECT
Yacht Builder, Marine Railways, Storage and Repairs
East Greenwich, Rhode Island, U. S. A.

What do you want—What have you?
C. S. SPONAGLE
Yacht Brokerage and Insurance
Commercial Boats
Competent Crews Furnished
88 Broad Street Boston, Mass.

Boat Headquarters in Baltimore
For quick action list your boat with us.
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Yacht and Ship Brokers
106 N. Charles St., Baltimore, Md.

STRONG & BEEKMAN
Yacht and Ship Brokers
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Yachts — All Types, Sale or Charter
Also Commercial Vessels
Tel.: Whitehall 537 Cable: "Strobick"

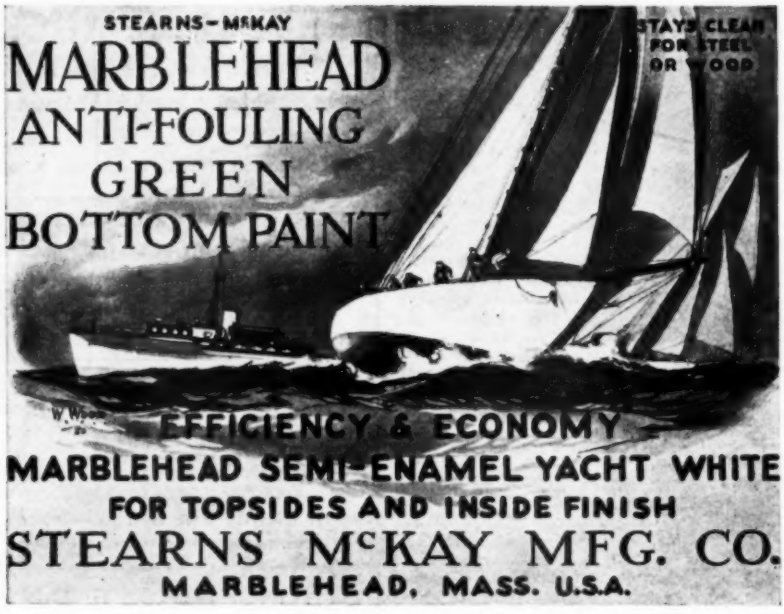
110-Ft. Yacht "CONSUELO"
Sixteen Years
Designing
Experience
Specialty
Seagoing Yachts
J. MURRAY WATTS, N. A.
136 South Fourth St. Philadelphia
Phone: Lombard 2072

## *Many Causes for Poor Steering*

TO treat a subject for long discussion in a concise way, I shall outline first, the causes of hard steering and then shall refer to each by number, giving remedies where they will apply and also mentioning the causes where remedies would be too costly to warrant them. Causes are as follows: form of hull, speed of boat, rudder, steering gear, distance between propeller and rudder, trim of boat, surface of hull, heights of superstructure.

Discussion of causes and remedies for same—1. The form of hull has much to do with the steering qualities but the expense of tearing out and rebuilding would not be wise from the standpoint of the relation between value of hull and cost of rebuilding. The faster a boat travels the easier it will steer, and if the boat could economically be made to travel faster, by additional power, it would steer easier, but it is doubtful if many owners would care to go to this expense. Of course the speed will be increased in any boat, however slightly, if cause No. 7 is remedied. An increase in blade area of the rudder will effect an ease in steering as will also the lengthening of the tiller arm, by virtue of greater leverage. These can be tried out as an experiment by temporarily bolting a thin board onto the rudder blade, and by lashing a piece of wood of any length desired onto the present tiller arm. Then, when you have arrived at that which gives the best result, replace one or the other or both, permanently. See that all sheaves on steering line are large and run easily. A larger steering wheel will make steering easier on the arm muscles. If desired, two blocks can be rigged up permanently on each side of the tiller arm to serve as a luff tackle, making steering easier, though in most small boats it would probably be more cumbersome than necessary. Some boats have the rudder too near the propeller wheel, which does not allow the rudder enough solid water to have its greatest effect in turning the boat. If the boat trims down by the head, it will steer harder than if trimmed a little by the stern. See that the keel of your boat is a little nearer the surface of the water at the bow than at the stern. The smoother the surface of your hull, the greater speed you will find, no matter how slight. As mentioned in No. 2 this will in a small measure affect the turning qualities of your boat by the reduction of fluid friction. Have the surface of your hull planed and sanded as smooth as it is possible to get it and finish it with the best hard surface of paint or varnish. It will be easier to keep clean and gives an owner a greater feeling of pride in his boat. Great height of superstructure affects the turning qualities, especially in winds. Aside from the bad appearance of great high cabin sides, the wind resistance is tremendous when compared to the size of boat which usually carries them. It would be far better to keep the cabin sides lower, giving more crown to the carlins. This cuts down windage and is thereby beneficial to steering.

S.G.T., Belmont, Vt.




## *Build a Boat*

(*Continued from page* 46)

should be made with a thread of cotton laid in white lead between edges and all joints should be properly caulked before the boat is launched.

The boat is now ready to be turned over and the inside finish undertaken. Additional frames of 1½ inch x 1 inch oak can be fastened between the original one for greater stiffness. The deck beams forward and aft can be shaped and fitted to suit the discretion of the builder. The space underneath the deck is useful for holding the fuel tank. The deck at the side and the coaming can be finished about as shown on the drawings to suit.

The engine bed will consist of two pieces of two inch oak or yellow pine located about as shown and shaped to suit the particular engine selected. They should be well fastened. A shaft log is built up on the outside of two-inch stock and the hole for the shaft bored through. The stuffing box can be attached on the outboard end and if desired an additional log and box may be applied inboard also. The rudder should be hung on the transom and can operate with a tiller stick or wheel as desired.

The finish of the job should be a proper painting inside and out. Several coats of good white paint on the outside of the hull with a tan or buff deck paint will add to the appearance.

## *Pressure Tank Is Best*

(*Continued from page* 31)

A slack belt and idler drive has been employed by the writer for three seasons with entire satisfaction and the original belt will be used next season. The idler is arranged to raise by pressing a pedal, thus tightening the belt and driving the compressor. The idler is drawn away by a spring allowing the belt to slack and ride on the shaft pulley without turning. A flanged pulley on the propeller shaft prevents the belt from running off and a flexible cable make controlling possible from the steering position. The installation is easy and but few tools are required. As large a tank as space will permit is advised and it should be well fastened. The advantage of a large tank will be readily appreciated should it be necessary to give signals immediately after blowing a slip whistle. The pipe from the tank to the whistle should not be smaller than the whistle connection. Avoid all unnecessary elbows and fittings and make up the joints with shellac or Dixon's Pipe Joint Compound. In piping from the collector or air compressor use annealed copper tubing and compression couplings of a size to correspond with the collector of compressor tapping. A check valve at the tank is necessary to prevent a loss of pressure through the compressing device and to relieve the lack of pressure to a certain extent. No pressure tank should be installed without a safety valve and a pressure gauge. When all joints are tight it should be possible to hold pressure over night with but a slight drop.

It is possible but not practical to construct the entire outfit yourself. But few have pattern shop, foundry and machine shop facilities and even then the cost would be several times that of the manufactured article and the product would not be as good. It is impossible to make at home a collector or compressor at a price for which the manufactured device could be purchased. You might make the whistle out of pipe and fittings, but it would be a clumsy looking affair of the single tone sharp sounding variety or if the chime was attempted a discord would be the result. There is a chime whistle manufactured, having a deep tone with good carrying power. This whistle is for pressures not over 75 pounds. Most air whistles are made for pressures of not over 75 pounds and above that pressure they invariably screech.

Don't try to make your own whistle outfit. Even if you can do it, it will cost you more money and you cannot expect to equal the outfit designed by engineers and manufactured by a reliable concern with a reputation to uphold.

W.B.M., Newburgh, N. Y.

## *The Timing-Rod Method*

(*Continued from page* 33)

center mark; the magneto being set at full advance. The other valve opening and closing marks are used to check up on the exhaust closure.

The second method depends upon the angular position of the crankshaft and hence the flywheel and makes use either of a protractor attached to the flywheel for timing purposes or a marked flywheel rim; in fact many engines are sent out with their flywheel rims permanently marked. A pointer of some sort must be attached to the engine frame or crankcase and set so that the top and bottom centers, or upper and lower dead centers, of the piston travel, marked on protractor or wheel rim, coincide with the pointer. The valves will open and close and the ignitors will break at certain angular positions before or after the dead center marks and if these angles are obtained from the engine manufacturers, they may be marked off on rim or protractor. Then as each mark is brought in line with the pointer by turning the flywheel in its usual direction of rotation, the valves are checked up to ascertain if they are just opening or closing, as the case may be. As before, the tappet clearance must previously have been tested and set correctly.

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*Advertising Index will be found on page 142*

# "ADIEU" WINS THE FISHER TROPHY

THE VICTORY of this 32 foot Hacker-built wonder-craft, in three of the most hotly contested heats of a major motor boat race ever run, conclusively demonstrates the all round superiority of Hall-Scott marine engines.

It was a clean cut, convincing victory, over last year's champion, a practical demonstration of the remarkable Stamina, Power and Efficiency of the Hall-Scott.

The engine which powered "Adieu" is a Hall-Scott six cylinder of only 5" bore and 7" stroke, and a total cylinder capacity of 25% smaller than that of any other engine in the race, but,

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Hall-Scott marine engines have Stamina as well as Speed. Their wonderful record of 1920 is still unbroken — not a single bearing, connecting rod, piston, cylinder, crank shaft, or other major part lost during the entire season.

You should own a Hall-Scott. We have duplicates of "Adieu's" engine in stock. Have us reserve one for you.

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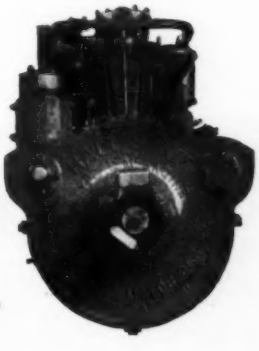
*The most highly developed Marine Engine in America.*



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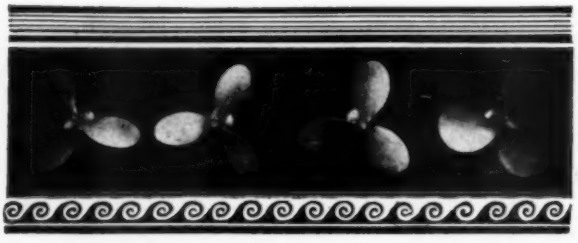


## *Overhaul Your Own Boat*

(*Continued from page* 11)

flame is carried away very rapidly and also there is danger of a fire being started in the general debris under the boat which would quickly get beyond control as a result of the wind. The putty-knife should be clean and of ample size. All the paint can be removed the first time over after a little practice and the final clean-up will be a simple matter. The next step is a very generous and thorough sandpapering of the hull followed by the application of a coat of yacht paint of the desired color. Paints should not be applied too heavily. Much better work will result from the application of three or even four coats of well-brushed paint on the surface.

Naturally before any of the painting is begun such repairs as are necessary have been completed. Leaks in the bottom have been caulked up and the cabin roof has also been made tight. Caulking a boat's bottom is an operation which requires much skill and experience. Should it be necessary to recaulk the entire bottom all the old caulking should be entirely cleaned out. Putty for the bottom seams should be mixed of white lead, whiting and oil, and should be tinted to the bottom color so that streaks of light color will not show through at the seams.

Points to note particularly for traces of leakage are along the garboard plank and in the neighborhood of the stuffing box and stern post. Corrosion of the bolts holding the rudder shoe to the keel is likely to require their renewal at intervals. Broken guard moldings have been repaired or replaced and all the incidental little items given attention.

Having completed all the exterior work required on the topsides and hull proper we can turn our attention to the refinishing of the bright work which is always a task of some importance. There are several ways in which varnished work can be kept in good condition. The easiest but perhaps the least practised, is that of keeping the work well covered with good varnish at all times. This requires revarnishing every five or six weeks throughout the active season and will appear to many to be entirely too much. Contrast this to the boat where the varnish is laid on thickly in the spring and then allowed to take care of itself. The natural consequence of this lack of attention is that the protective coat wears out toward the close of the season and moisture getting underneath will soon stain the wood to such an extent as to require complete refinishing in order to look respectable. It does not necessarily follow that varnished work must be cleaned down to the bare wood each season. If it is refinished occasionally during the summer and given a protective coat in the fall it will be found to be in excellent condition in the spring. A very thorough sandpapering with fine sandpaper will quickly prepare the surface for a new coat of varnish and it may only require one coat to restore it. Two coats will certainly be ample. In case it is necessary to clean the work down completely a good brand of paint and varnish remover should be used, applied as the manufacturer directs. Instructions for the different brands will vary. After cleaning the varnish off the surface should be scraped and sandpapered to an absolutely smooth condition. A coat of liquid or paste woodfiller should be applied followed by a rub down when dry. Two or three coats of the best quality of spar varnish should then be applied rubbing down after each coat is thoroughly dry.

Varnish should never be applied late in the afternoon or on other than warm clear days with a temperature of over 60 degrees.

To determine the amount of paint and varnish which will be required one can safely assume that varnish will cover about 200 square feet, two coats to the gallon.

Bottom top and deck paints 250 to 300 square feet, two coats to the gallon according to the condition of the surfaces.

Such parts of the boat as pipe rails and stanchions can be repainted with some of the prepared aluminum bronze paints which are readily available.

A few general rules concerning the use of oils for thinning and kindred purposes will prove useful.

For outside work, thin with raw linseed oil, and a little dryer.

To paint inside, thin with pure turpentine.

To paint wood that is very dry, it is better to add an equal quantity of oil to the paint.

Use boiled oil in thinning very dark colors.

When an egg-shell gloss is required thin with raw oil ½ turpentine for the last coat.

When the last coat is to be a gloss coat, have the under coat flat.

Putty the nail holes after the first coat. Add more dryer to paint in cool and damp weather than in summer. Allow plenty of time for each coat of paint to dry before applying another coat.

Some don'ts which should be remembered are also worth mentioning.

Don't forget to shellac all knots before starting to paint.

Don't put on thick coats of paint; thin coats hold better and wear longer. (*Continued on page* 82)

# DEVOE

## The Most Important Ingredient of Paint Is Never In the Formula

*(A point for boat owners to remember)*

"X paint must be as good as Z paint," you may say. "They both have the same ingredients in the formula."

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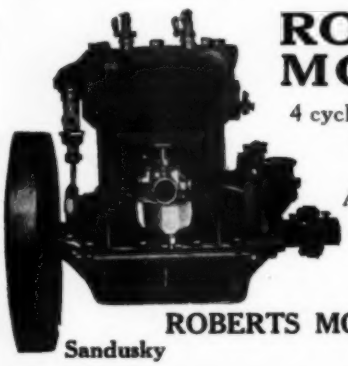

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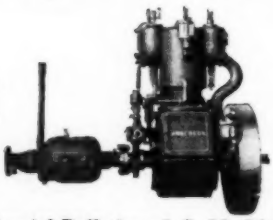

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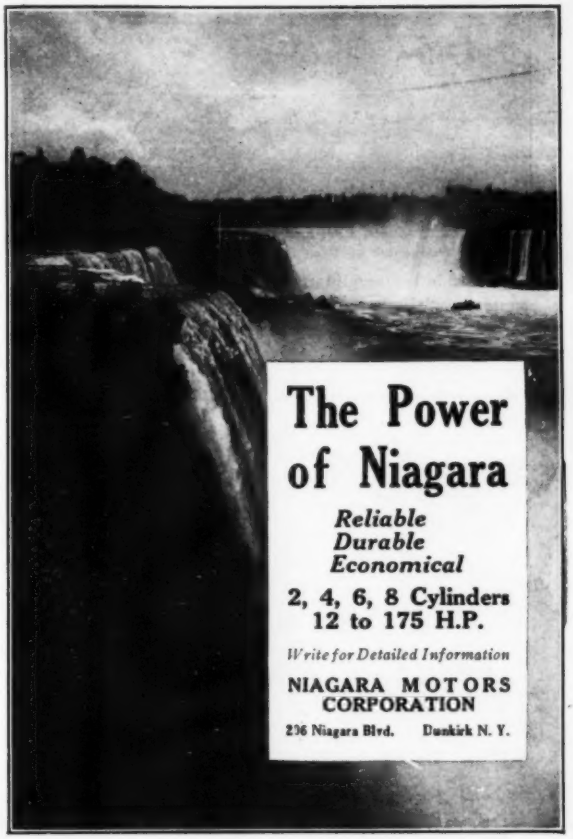

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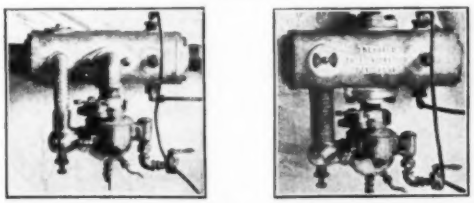

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| 303 | 16 | HP. | Lathrop, 2 cyl. 2 cyc. with coupling | 310 |
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| 312 | 20 | HP. | Lathrop, 2 cyl. 2 cyc. | 380 |
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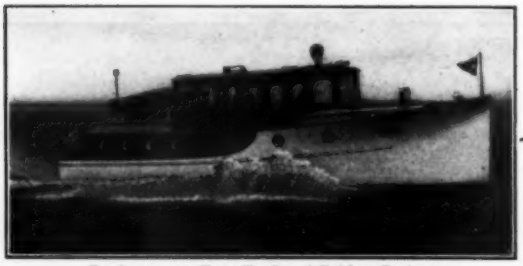

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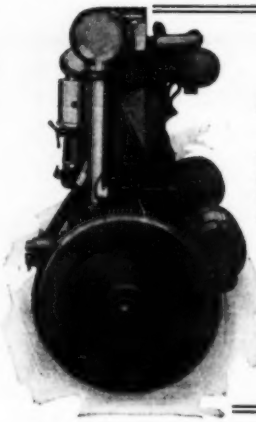

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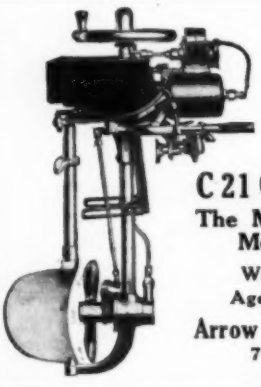

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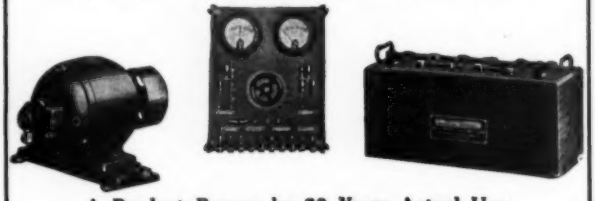
**1415 Sedgwick Ave., New York**

# "DAYTON" LIGHTING AND IGNITION SYSTEMS. 6, 12, 32 VOLTS COMPLETE



**A Product Proven by 20 Years Actual Use.**
**Complete Catalogue Upon Request.**
**THE A-C ELEC. MFG. CO., DAYTON, OHIO**

# SEABRIGHT DORY CRUISERS

The most seaworthy motor cruisers of their size ever built. If you want real pleasure at the lowest cost and with the utmost safety you should own one of these famous Seabright boats. We also build Work Boats, Ship Tenders, Life Boats, Surf Boats, etc.

*Write today for prices*

**THE BANFIELD BOAT AND LAUNCH WORKS**
**Office and Works:**
**Atlantic Highlands** **New Jersey, U. S. A.**

# A Quality Product

can be assured by the use of

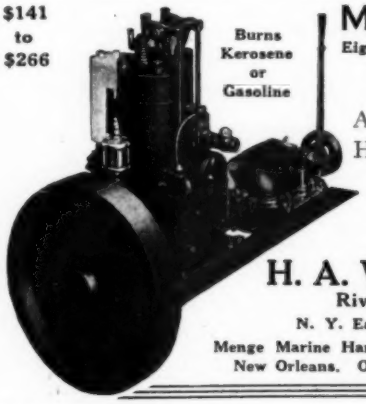
## HARLEY CASTINGS AND HARLEY DROP FORGINGS

Harley Quality is more than a word—it implies the use of quality materials by quality workmen in producing this tangible Harley Quality—at no greater price than often paid for inferior goods.

The Dodge Express Cruiser was Quality from stem to stern—Harley Quality castings were utilized in making the engines.

**THE HARLEY COMPANY**
**1922 Page Boulevard** **Springfield, Mass.**
Detroit Sales Office: 1423 Book Bldg., Detroit, Mich.
Cleveland Sales Office: 1366-68 Hanna Building, Cleveland, Ohio

**$141 to $266**



**Burns Kerosene or Gasoline**

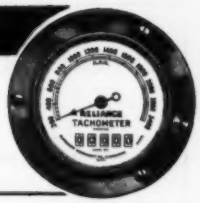
**MAYNARD-ADAMS ENGINE CO.**
**Eighth and Delaware Streets**
**Berkeley, California**

A high grade 3½ H.P. 4-cycle power plant Ford replacements.

**H. A. Westerman,**
**Riverhead**
**N. Y. Eastern Agent**
**Menge Marine Hardware & Supply Co., New Orleans. Other agents wanted.**


*Advertising Index will be found on page 142*

## RELIANCE TACHOMETERS



**Substantial in Construction Neat in Appearance**
**Efficient in Operation**
**A Necessity on Your Motor Boat**
***Write for Bulletin***
**Blanchard Instrument Company, Cambridge 39, Mass.**

**Yacht Construction** ***Repairs, Outfitting, Storage***

## PORT JEFFERSON MARINE RAILWAY CO.

**PORT JEFFERSON, N. Y.**

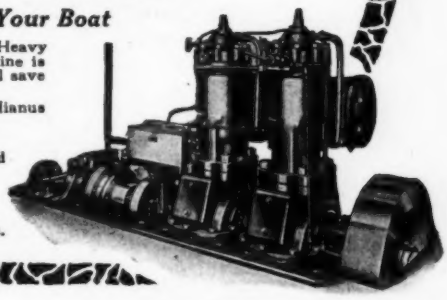
**Large Railway 1000 tons cap'y, 15 feet draft.**
**Small Railway 300 tons cap'y, 10 feet draft.**

**Gasoline, water, yacht supplies** ***Excellent harbor, all facilities***

## MIANUS MARINE MOTORS

## THE FIRST REALLY SUCCESSFUL HEAVY OIL ENGINE

***Consider this Power Plant for Your Boat***



For your cruiser, auxiliary or commercial boat, the Mianus Improved Diesel Heavy Oil Engine (Leissner System) has no equal for service and economy. Gasoline is high in cost. Heavy oil is cheap and plentiful. A year or two of operation will save you the cost of your engine in fuel.

More simple than the gas engine—more economical than the Diesel. The Mianus Heavy Oil Engine demands your attention.

**Five sizes up to 60 H.P.**

**The famous Mianus two cycle and four cycle engines are also manufactured by us.**

***Your copy of our catalog is waiting for you. Write for it.***

**The Mianus Motor Works, Stamford, Conn., U. S. A.**

New York, N. Y. Baltimore, Md. Norfolk, Va. Boston, Mass.
Portland, Maine Eastport, Maine St. John, N. B.

# PURDY BOAT COMPANY

**Designers and Builders of**

## EXPRESS CRUISERS

**TRENTON** **MICHIGAN**

**Improved Motor Boat Closet**

**Figure 1404**

**Dimensions: 18 x 18 x 11" high to top of bowl; 2½" cylinder. For above or below water line.**

**The best little closet on the market today, possessing many of the advantages of the large size toilet. All brass and porcelain. Oak seat and cover.**

**All prices subject to market advances, which are continually changing.**

**THE J. H. CURTISS CO.**

**The J. H. Curtiss Co.**

**Pioneer Specialists in Marine Sanitary Fixtures**

**Since our advertisement appeared in the first issue of MoToR BoatinG, December, 1907, hundreds of Curtiss fixtures have been installed in motor cruisers and yachts of all sizes, including some of the finest boats launched within this period.**

**The Curtiss line is exceptionally complete, varied in type, size and price to meet every possible requirement. Each model has been designed in accordance with our wide experience in boat work and can be depended upon in quality, service and durability no matter whether it is our highest or lowest priced model.**

***"PRICES ON APPLICATION"***

**With Pump**

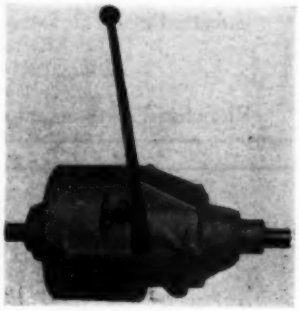
**Cock on pump swings upward, thus preventing breaking of bowl. Soap-dish is porcelain and removable.**

**No. 5**
**Height, 19 in.**
**Width, 19 in.**
**Depth Closed, 6 inches.**
**Quartered Oak Case, or Mahogany Case.**

**Lining and Fixtures Nickel-plated. Porcelain Bowl. Mahogany or Quartered Oak Case.**

**2 South Street, New York**

*Built by*
# LUDERS
***The Last Word in Yacht Designing and Building***
**Luders Marine Construction Company**
**Stamford, Conn.**



**MASTER REVERSE GEARS**

Strictly high quality reverse gears. Multiple disc clutch, nickel steel shaft and gears, hardened and ground, with bronze bushings working on hardened steel pins. Aluminum case saves weight.

Four sizes transmitting 12, 25, 50 and 85 H.P. respectively per 1000 R.P.M.

Write today for prices.
MASTER MOTOR CO.
19 Price Ave.
Lockport, N. Y.

## DELCO-LIGHT

The Delco-Light Marine Set gives a complete electric light and power service, *independent of the main engines.*
Delco-Light Company
Dayton, Ohio

## DON'T BUY A BOAT
TILL YOU SEE THE
**CAPE COD 20-FT. DORY LAUNCH**
**The Safest Little Family Boat Built. Motor Housed In.**
**Other Standardized Cape Cod Boats**

| | |
|---|---|
| 17′ Sail Dory | 14′ Outboard Motor |
| 16′ Shallow Draft | 10′ Row Boat |
| 17′ Life Saving Dory | 12′ Row Boat |

Write for Prices.

**CAPE COD SHIPBUILDING CORPORATION**
Successors to Cape Cod Power Dory Co.
Builders of craft to 150′ length, or 10′ draft.
Winter Storage.
Main Office and Works, 367 Main Street, Wareham, Mass.
New York Show Rooms, 412 Eighth Avenue, New York City
Export Office, Factory Sales, 120 Broadway, New York City

## Build Your Own Boat

—cruiser, work boat, open launch or rowboat — from our knock-down frames or patterns.

**Save ½ to ¾ the Cost.**

**Send for Catalog and Tell Us Your Requirements.**

**DEFOE BOAT & MOTOR WORKS**
3220 State Street Bay City, Mich.

## ONE WAY ONLY—THE BEST WAY—BUY!
*We Sell Our Sets*
# Wireless for Ship *and* Land Stations
**CUTTING & WASHINGTON RADIO CORPORATION**
GENERAL OFFICES
6 and 8 West 48th Street, New York, N. Y.

# MARINE JOINTS

**That Transmit Full Power at Full Speed. Have been giving satisfaction for sixteen years.**

**BLOOD-BROS. MACHINE CO.**
**Pioneer Builders of Universal Joints**
**ALLEGAN MICHIGAN**

## Money Made is Money Saved

**E. J. WILLIS CO.** **85 Chambers St., New York**

*Advertising Index will be found on page 142*

# MARINE ELECTRICAL EQUIPMENTS

## SHIPS TELEGRAPHS

SINCE 1845 WE HAVE BEEN DESIGNERS AND MANUFACTURERS OF COMMUNICATING AND SIGNALLING SYSTEMS FOR NAVAL AND MERCHANT VESSELS.

CORY ELECTRICAL AND MECHANICAL TELEGRAPHS AND LIGHTING EQUIPMENTS ARE THE RECOGNIZED STANDARDS.

## CHAS. CORY & SON, Inc.

NEW YORK
183-187 Varick Street
Main Office and Factory

PHILADELPHIA
207 Market Street

SEATTLE
515 Hage Bldg.

SAN FRANCISCO
11 Mission Street

# MARINE SUPPLIES IN BOSTON

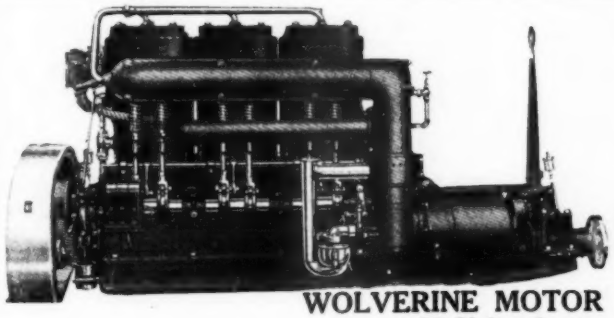
**WRITE US FOR QUOTATIONS**

or call at our store if you are in Boston. We carry the most complete stock of marine hardware, motor boat supplies, accessories and specialties anywhere in this vicinity.

Honest prices, prompt delivery and careful service to mail or local orders, in retail or wholesale quantities. No catalog on account of current price changes.

## Boston Marine Hardware Co.

259 Atlantic Ave. Boston, Mass.



# "WOLVERINE"

**The Motor with the Bore and Stroke**

**HEAVY DUTY MARINE ENGINES**

**KEROSENE** { Used successfully for 15 years. Device built into engine.

**WOLVERINE MOTOR WORKS**
**33 Union Avenue**
**Bridgeport, Conn., U. S. A.**

(Formerly Grand Rapids, Mich.)

Catalogue No. 113 gives full information

# SAL SPEEDOMETER for MOTOR and SAIL YACHTS

IS THE ONLY KNOWN DEVICE FOR DETERMINING THE EXACT SPEED OF ANY BOAT. ASK FOR INFORMATION

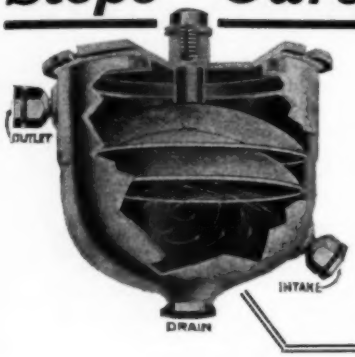
**HAMILTON & HANSELL, Inc., 13 Park Row, N. Y. City**

# FINISHED CRANK SHAFTS

**P. H. Gill & Sons Forge and Machine Works, Brooklyn, N. Y.**

We are furnishing them to some of the leading marine engine builders. Carbon and Alloy Steel, Heat Treated to your own specifications. We grind all Pins and Bearings. Forged, machined, and finished complete in our own plant. Let us quote you.

# Stops Carburetor Troubles! KLEENGAS PURIFIER




*Fully 90% of your carburetor trouble is caused by water and dirt in your fuel. You can prevent this trouble entirely with a KLEENGAS PURIFIER.*

You can't prevent water from collecting in your fuel tank and line—it condenses from damp atmosphere as well as the water in the gas or kerosene you buy. You can't prevent sediment, dirt, fluff, rust, impurities—some scales off the tank lining—some comes in the gasoline itself. But you can prevent all the troubles caused by these impurities.

KLEENGAS is a high grade PURIFIER scientifically designed, simple in construction and made of the best non-corrosive materials. Aluminum bowl, double parabolic fine mesh bronze screens, brass drain tap at bottom. It cleans itself by the swirling motion, the impurities dropping down so they don't clog the screen. Large capacity allows full gas flow and requires only occasional draining.

*Order a KLEENGAS today—$10.00 postpaid. Money cheerfully refunded if not as guaranteed. Hundreds in use. Easily installed—no soldering.*

*Excellent proposition for distributors and dealers—write*

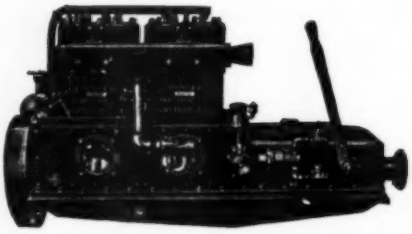
**THE NATIONAL AUTOMOTIVE MFG. CO.**

822 CHAMPLAIN AVE., N. W. - - - CLEVELAND, O.

# GRAY-PRIOR

FOUR CYCLE MARINE MOTORS

*Built up to a Standard—not down to a price*



## A Clean-Cut Power Plant

*For Commercial Boats and Cruisers*

**Model D-4, Medium Heavy Duty**

36 Horse Power Bore, 4½ inches Stroke, 8 inches

*Write today for full description and prices*

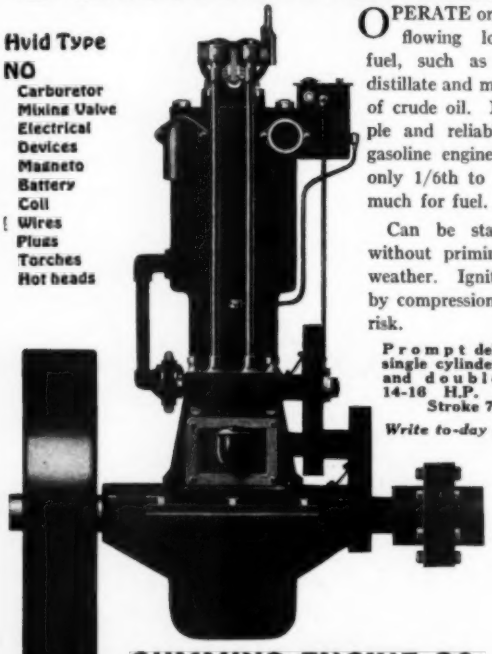
**THE GRAY & PRIOR MACHINE COMPANY**

56 Suffield Street Hartford, Conn., U. S. A.

# Cummins Oil Engines

Hvid Type NO

Carburetor
Mixing Valve
Electrical
Devices
Magneto
Battery
Coil
Wires
Plugs
Torches
Hot heads



OPERATE on any free-flowing low grade fuel, such as kerosene, distillate and most grades of crude oil. More simple and reliable than a gasoline engine and cost only 1/6th to 1/10th as much for fuel.

Can be started cold without priming in any weather. Ignition solely by compression. No fire risk.

**Prompt deliveries on single cylinder, 7-8 H.P., and double cylinder 14-16 H.P. Bore 5", Stroke 7½".**

*Write to-day for prices*

**CUMMINS ENGINE CO.**

7th and Jackson Sts. COLUMBUS, IND., U. S. A.

GENUINE

# HARTHAN

TRUE SCREW

# PROPELLERS

The principle of a True Screw is strictly followed out in the patterns from which all genuine Harthan Propellers are made. This type is known to be the most efficient.

Harthan wheels are made of a special bronze composition, very tough and strong. This allows a very thin blade, the edges of which are brought down very sharp, which, with the extra high polish, reduces the power-absorbing element to a minimum.

We can supply propellers with two or three blades, in practically any pitch, either right or left hand.

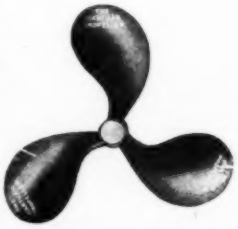
**Look for the Trade-Mark on Each Blade**

**McFARLAND FOUNDRY & MACHINE COMPANY**

1100 Willow St.,
TRENTON NEW JERSEY

**Representatives**

NEW YORK: Topping Bros., 122 Chambers Street.
PHILADELPHIA: F. Vandercherchen's Sons, 7 N. Water Street.



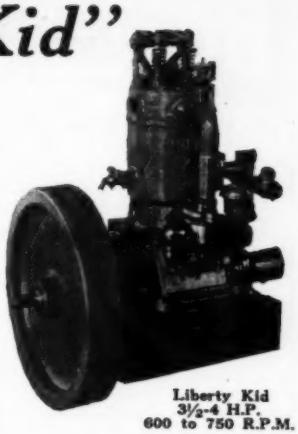

*Advertising Index will be found on page 142*

# "Liberty Twin" "Liberty Kid"

THERE'S a new class of marine motors on the market—"Liberty Twin" and "Liberty Kid" are the leaders of the new class. High grade, up to the minute, four cycle valve-in-head design, finest materials and best of construction throughout.

Medium duty motors that will stand up to hard work all day long. Sturdy enough for substantial boats, fishing and commercial work—built originally for the Pacific Coast fisherman who gives his engine hard service the year around.

Never before have such quality and strength been built into motors of this size. You expect quality in a big high priced motor; you'll be pleasantly surprised at the quality in these little Liberties. Marked simplicity, accessibility and durability; noteable smoothness of operation and freedom from vibration—in fact everything you expect in a high grade and thoroughly satisfactory engine.



**Liberty Kid 3½-4 H.P. 600 to 750 R.P.M.**

**The Liberty Twin 8-10 H.P. Medium Duty. Also supplied with a unique double fuel system for gasoline and kerosene, using two separate carburetors.**

Liberty Twin develops 8-10 real H.P. 200 R.P.M. to 830 R.P.M. on gasoline. 250 R.P.M. to 850 R.P.M. on kerosene. Our new double fuel system with dual carburetors is in a class by itself. This engine is ideal for cruisers, fish boats, work boats and auxiliaries.

Liberty Kid develops 3½-4 H.P. at 600 to 750 R.P.M. It's built to last, with power to spare. For runabouts, tenders, small work boats, auxiliaries, etc.

***Send for catalog with new prices.***

***AGENTS-DEALERS-BOAT BUILDERS***
***Get our proposition***

**A. G. HEBGEN, Manufacturer & Sole Distributor.**
**440 Market Street, San Francisco, California**

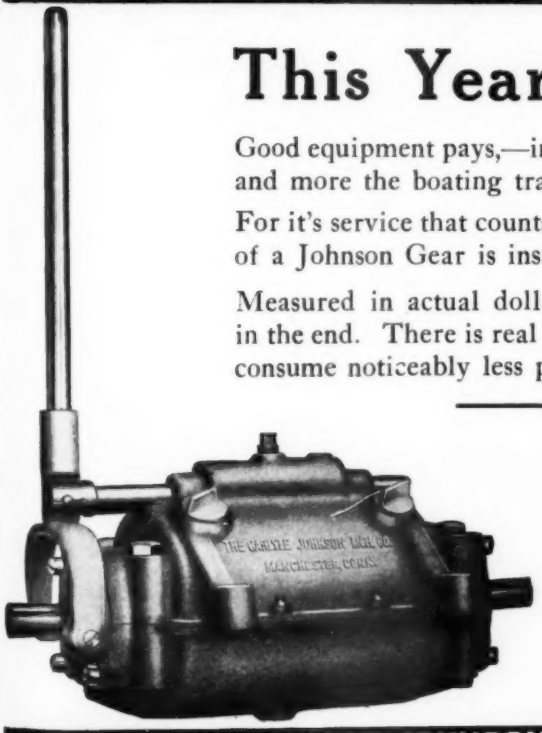
## THE JOHNSON MARINE REVERSE GEAR

# This Year—Buy the Best

Good equipment pays,—in time, in money, and in satisfaction. More and more the boating trade is looking for *value* rather than price.

For it's service that counts. And when service is considered, the cost of a Johnson Gear is insignificant.

Measured in actual dollars and cents, Johnson Gears save money in the end. There is real satisfaction in their smooth operation; they consume noticeably less power; but, *above all—they wear.*




***The Four Big Features:***

**Johnson Friction Clutches.**
**Alloy Steel Gears and Shafts.**
**Ball Bearings throughout.**
**Completely enclosed.**

*Write Department 25 for our Catalog.*

**THE CARLYLE JOHNSON MACHINE CO.** MANCHESTER CONN

# BOSTON MOTOR BOAT SUPPLY CO

100-102 ATLANTIC AVE.
BOSTON, MASS.

**BIG REDUCTIONS IN SECOND-HAND AND REBUILT ENGINES**

| | | | | | |
|---|---|---|---|---|---|
| 36 | H.P. | Model D | Gray | Prior | (Like new) used 2 months.....$900.00 |
| 20 | " | 4 cyl. | 2 cyc. | | Rhode Island ..... 100.00 |
| 15 | " | 2 " | 2 " | | Mianus (Rebuilt) ..... 175.00 |
| 10 | " | 4 " | 4 " | | Harvard (Rebuilt) ..... 125.00 |
| 6 | " | 1 " | 4 " | | Meade (Rebuilt) ..... 75.00 |
| 15 | " | 3 " | 2 " | | Western Reliance ..... 75.00 |
| 10 | " | 2 " | 2 " | | Lathrop (Rebuilt) ..... 175.00 |
| 3 | " | 1 " | 2 " | | Mianus (Like new) ..... 80.00 |
| 5 | " | 1 " | 2 " | | Gray ..... 40.00 |
| 11 | " | 3 " | 2 " | | Roberts (Rebuilt) ..... 100.00 |
| 3 | " | 1 " | 2 " | | Dubray ..... 30.00 |
| 12 | " | 2 " | 2 " | | Stewart with Reverse (Rebuilt)..... 150.00 |
| 3 | " | 1 " | 2 " | | Stewart (Rebuilt) ..... 70.00 |
| 3 | " | 1 " | 2 " | | De Mooy ..... 30.00 |
| 6 | " | 1 " | 2 " | | Eagle M. & B. (New) ..... 100.00 |

All these engines are fitted with Carburetors and Shaft Couplings.

# HESS MONO-MARINE

**A High Grade Single Cylinder Four Cycle Engine of 4-5 H.P.**

The ideal engine for your tender, fishing boat or other craft up to 30 ft., and on larger boats for operating generators for lighting plant or wireless outfit.

Many parts interchangeable with standard Ford engine parts, carried in stock by dealers the world over. This includes timing gears, valves, valve springs, connecting rod, piston, etc. Dual ignition.

Furnished complete with Hot-Spot Manifold, High Tension Magneto, Carburetor, Timer, Spark Coil and Switch.

**WRITE TODAY FOR CATALOG**

*We have an excellent money making proposition for agents and dealers*

**HESS MOTOR COMPANY**

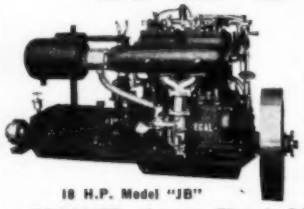
**1430 Sherman Street** **Detroit, Michigan**

Exclusive Export Sales Dept., W. D. Blood & Co., 44 Whitehall St., New York, N. Y.

## Twenty Years on the Market

# REGAL

## —FOUR CYCLE— MARINE ENGINES



18 H.P. Model "JB"

Built for commercial or pleasure boats. Sizes 2 H.P. —weight 125 lbs. to 50 H.P. —weight 5000 lbs. One to four cylinders. Use gasoline, kerosene or distillate for fuel. Easy to start and may be throttled to a very slow speed.

**REGALITE—the new Electric Lighting Plant, 2 h.p. air cooled motor, ¾ k.w. generator. Write for information.**

**REGAL GASOLINE ENGINE CO.**

**74 West Pearl Street** **COLDWATER, MICH.**

# NJM

**The NJM is the improved Ford marine. It consists of four different models of the same size motor.**

Cylinders 3¾ x 4 cast in block, head separate. Ignition—Splitdorf high tension with impulse starter. Lubrication — semi-force feed. Reverse Gear—Carlyle Johnson. Carburetor—Miller. Open flywheel type, cast iron base suitable for fishing boats, small work boats and cruisers up to 30 ft. in length.

$435.00 F.O.B. Keyport, N. J. Write for literature.

**NEW JERSEY MOTOR SALES COMPANY**

**KEYPORT, NEW JERSEY, U. S. A.**

# The Compass For Your Boat

should be the best obtainable. For seventy years Ritchie compasses have been the choice of experienced navigators.

**Select the Ritchie for your boat.**

*Our catalog will show you the one best suited for your needs. Send for a copy today.*

**E. S. RITCHIE & SONS**

Established 1850

**110 Cypress Street**

**Brookline, Mass.**

# You Can Build Your Own Boat

and save 2/3 the cost

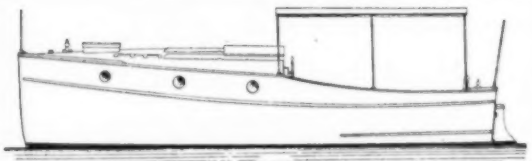
**By the BROOKS K. D. SYSTEM**

Brooks Boats are handsome, seaworthy, up-to-date in design and easy to build. We also build complete boats.

**The Brooks Guarantee: Your Money Back if You Are Not Satisfied**

*Send 10c for 64-page catalogue showing all models.*

**BROOKS MFG. CO., 1101 Rust Ave., Saginaw, Mich.**



**26' x 8'6" Cruiser "SCOUT"**

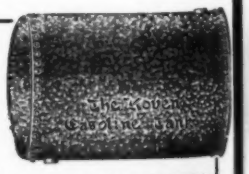
The most for the money on the market today. Large cockpit, roomy cabin with toilet, galley and berths for four. Full headroom. Four cycle motor, speed 9-10 miles, fully equipped for cruising, $2500.00.

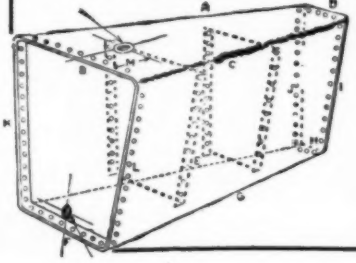
We have a large number of models in both Runabout and Cruisers from which we furnish K D frames to complete outfits. We gladly quote on your requirements.

**RICHARDSON BOAT CO.**

**371 Sweeney St., No. Tonawanda, N. Y.**

**Gasoline Tanks, Air Whistle Tanks, Mufflers, Stacks, Special Plate and Sheet Metal Work for Pleasure Boats.**





**L. O. KOVEN & BROTHER**

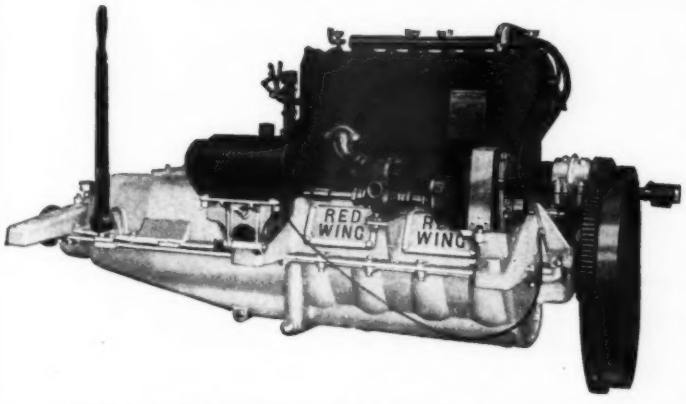
**Main Office, 158 Ogden Ave., Jersey City, N. J.**

**Branch, 50 Cliff St., New York City.**


*Advertising Index will be found on page 142*

Red Wing Thorobred
THE MOTOR WITH POWER TO SPARE

# SPRING IS NEAR




If you're considering a new motor act now. Later immediate shipment may not be as easy and you may have to wait just when you want your motor.

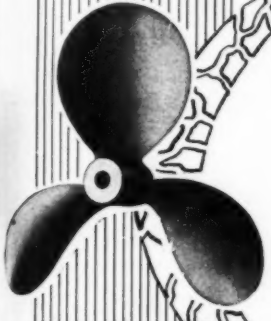
The "THOROBRED," recommended by all first class boat builders, and used by thousands in all manner of service all over the world, is a real investment. Use it for years and it will bring nearly as much, if you want to sell it, as you paid for it. That's the kind of a motor to buy. All you get out of it is merely interest.

One of our five sizes, 10 to 40 H.P. will exactly meet your requirements. They burn either kerosene or gasoline. Write us today for prices and details.

## RED WING MOTOR COMPANY

**Department B** **Red Wing, Minnesota** **U. S. A.**

# HYDE PROPELLERS



## AT MIAMI

GAR JR. II, owned by Garfield A. Wood of Detroit, built by C. C. Smith Boat & Engine Company of Algonac, Michigan, and powered with two Smith Twin Six motors made a clean sweep of all events in the Express Cruiser Class.

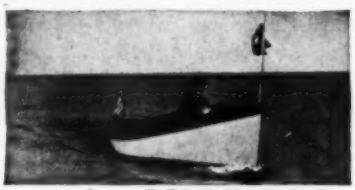
The sea sled Orlo II, owned by George Leary, Jr., of New York, built by Sea Sled Company, West Mystic, Conn., and powered with two Dual Valve Sterling engines established three new world's records.

Both of these boats used Hyde Turbine Type Propellers.

When record after record is broken by Hyde-equipped boats, isn't a Hyde the logical choice for that craft of yours?

*Our booklet "Propeller Efficiency" will be mailed on request.*

**HYDE WINDLASS COMPANY**
**BATH, MAINE**



**He Knew What** a trim, stanch, rot-resisting craft his would be if she was

**A CYPRESS BOAT**

so, naturally he had her built of CYPRESS.

TIDEWATER CYPRESS, "the Wood Eternal," is identified by the CYPRESS trade-mark "arrow." Please write us immediately if you can't find it.

**Southern Cypress Manufacturers' Assn.**

1317 Perdido Building, New Orleans, La., or
1317 Heard National Bank Bldg., Jacksonville, Fla.

**"WEATHERPROOF SUITS"**

We have purchased from the U. S. Government (Navy Dept.) a lot of wind and waterproof clothing. Each garment is scientifically designed by the U. S. Government experts to protect our men in service in all kinds of weather. One of these suits will keep you perfectly DRY, WARM and COMFORTABLE in any RAIN, WIND, or STORM. They are made of a very light rubberized fabric, very NEAT and COMPACT; they are much more superior than clumsy rubber or oiled clothing, they do not get STICKY in warm weather nor will they get frozen stiff in cold weather, will wear longer and can be used as a suit of working clothes. Four ventilating grommet holes under each sleeve to keep you from perspiring. This outfit is just the right thing for Boating, Motoring or any other outdoor work. Get a suit before you start to overhaul your boat this Spring; you will find it very essential. Price $5.85 per suit. We have a few that are slightly imperfect. Price $4.75. Also a few that have been slightly used. Price $3.65 per suit. Get it as soon as you can before they are all gone. **Remember**, we cannot duplicate them from the U. S. Navy after this lot is sold.

**MAIL ORDERS** will be carefully packed and shipped at once. Please state the size; we have all sizes. To avoid delay please send **remittance** with your order.

**Can be Worn as a Working Suit for General Use.**

**Atlantic Marine Exchange**
14 and 16 Atlantic Ave. BOSTON (9) MASS.

Ready to Defy Any Storm. Note: The Protection of the Neck.

**WOOLSEY COPPER PAINTS**

***and* MARINE PAINT SPECIALTIES ARE THE WORLD'S STANDARDS**

Copper Paints—Brown, Red and Green, Yacht White, Deck Paint, Marine Mixed Paints, Metal Bottom Paint, Seam Paint, Seam Compounds, Sparon (Spar) Varnish, Engine Enamels, Canoe Enamels, Boat Bottom Seam Compound, Copper Bronze, Light Sea Green and Regatta Green Yacht Bottom Paints, etc.

**C. A. WOOLSEY PAINT & COLOR CO.**
**Jersey City, N. J., U. S. A.**

*Send for our Marine Booklets, Free—Contain Color Spots and information "How to Paint a Boat."*

**"Western" Diesel Engines**

***Marine and Stationary Types***

**Sizes:** 25 B.H.P. Per Working Cylinder in single and multiples up to six cylinders.

**Fuel:** Low gravity oils in their natural state.

No high pressure injection air compressors nor high pressure fuel pumps. The simplest successful engine built operating on the true Diesel principle. Write for Bulletin No. 528.

**WESTERN MACHINERY COMPANY**
928 North Main Street, Los Angeles, California, U. S. A.
Branch: Rialto Bldg., San Francisco

**Motor Boats, Row Boats, Hunting Boats, Fish Boats, and Canoes.**

**Special Boats for Outboard Motors. Motor Boats** 16 to 24 ft. long. For lakes, rivers, shallow water and weeds.

**Catalog Free.** Save Money. **Order by Mail.** Please state what kind of boat you are interested in.

**THOMPSON BROS. BOAT MFG. CO.**
1907 Ellis Ave.
Peshtigo, Wis.

Socony gasoline has the low boiling point which insures utmost power and mileage. Its quality is always dependable—every gallon the same, and obtainable everywhere throughout New York and New England.

STANDARD OIL COMPANY OF NEW YORK

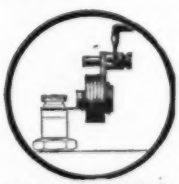
**SOCONY**
REG. U.S. PAT. OFF.
MOTOR GASOLINE

*Every Gallon the Same*

The sign of a reliable dealer and the world's best Gasoline

**SPARKO-GAP** $372 PROFIT IN 17 DAYS from

**Government - Approved Automobile Accessory**



This is the opportunity of a life-time to build up an automobile business of your own. Exclusive territory, no investment required. Write today without fail.

Mr. C. J. Weeks, 2139 Lydia Ave., Jacksonville, Fla., easily made this money by selling Sparko-Gaps!

**$100 in Less Than One Week**

Irving Laighton, Vineland, N. J., reaped this harvest by selling Sparko-Gaps! George A. Norton of Vernon, N. Y., earns big money selling Sparko-Gaps! Mr. E. Schuster of Brooklyn, N. Y., sold eighty the first day!

**SPARKO-GAP**

This is what it is and what it does. A tiny device that you fasten to the top of the spark plug. It increases engine efficiency 37 per cent. The only device to intensify spark. Approved by the United States Government. Thousands of Sparko-Gaps being sold every day. Large guaranteed profits.

**SPARKO-GAP CO.** 54-F WEST 39th STREET NEW YORK, N. Y.

**STRATFORD OAKUM**

**AND**

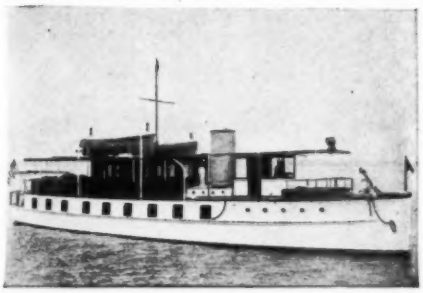
**CAULKING COTTON**

meet all U. S. Government specifications and receive the highest classifications of American Bureau of Shipping and Lloyds Register of Shipping.

**YACHT DEPARTMENT**

**George Stratford Oakum Co., Jersey City, N. J.**


*Advertising Index will be found on page 142*



**LUNETA** 85 feet long, with 18-foot beam and but 3-ft., 3-in. draft. Every comfort feature of the larger houseboats preserved, yet a decided reduction in operating cost and maintenance has been attained.

# "Up-to-the-Minute"

**and Mathis-built are synonymous.**

Witness the ideal combination of seaworthiness, spacious comfort and ability-to-go-anywhere presented in this newest

## 85-Ft. Mathis-built Houseboat

Marking an advance far beyond any previous houseboat designing, this type was represented in Florida the past season by two notable boats—

**LUNETA** Built by us for Col. S. L. H. Slocum, Washington, D. C.

**NAHMEOKA** Built by us for H. N. Baruch, New York.

Both won approval that assures the continued popularity of this pleasing model.

## MATHIS YACHT BUILDING COMPANY

***Specialists in Houseboats and Cruisers from 40 to 120 Feet.***

**COOPER'S POINT** **CAMDEN, N. J.**

# Do You Want Safety on Your Boat?

*Tip It Over, It's Safe!*

In the roughest sea or stiffest wind, the new Sterno Stove burns with **absolute safety** and dependability. The fuel cannot spill. Can you say the same, of any other boat stove?

Sterno Stove is ruggedly constructed of **galvanized steel** and guaranteed rust proof.

Burns Sterno Canned Heat, the solid non-spillable fuel, in the new, large economy cans.

Just what you want for the Yacht or Motor Boat.

Write now for particulars and prices.

**STERNO CORPORATION**

**9 East 37th Street** **New York**

**Read What The Insurance Company Says:**

Chubb & Son, Managers
Federal Insurance Company
5 and 7 South William Street
New York

In Reply Please Refer To [illegible]

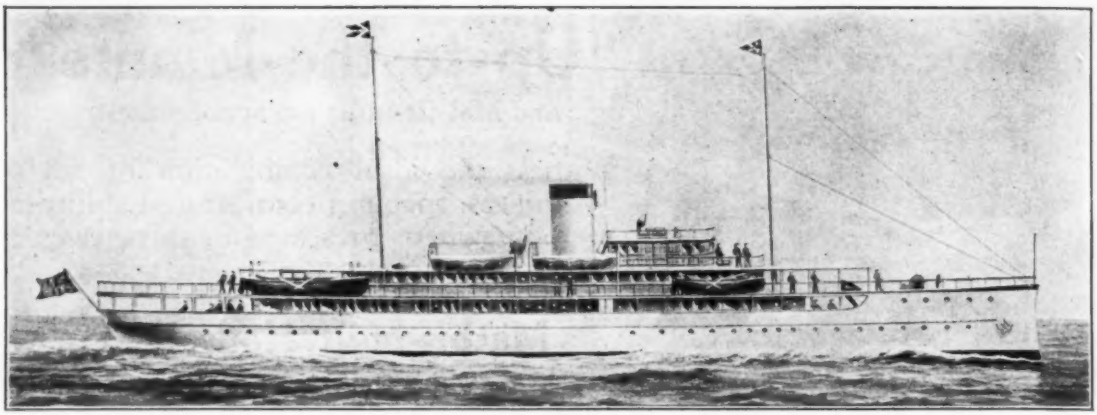
February 21, 1921

* * * * * *

We are very glad to advise you that in our opinion the Sterno stove, as exhibited to our surveyor, is very satisfactory for its purpose and reduces the risk of fire to a minimum.

Yours very truly,

[signature]



# The Selection of TIEBOUT HARDWARE

The selection of TIEBOUT hardware for the "Delphine", the largest and most luxurious steam yacht ever built in America, is simply the logical result of the determination of her owner, Mrs. H. E. Dodge, and of Henry J. Gielow, Inc., naval architects and designers, that nothing but the best obtainable materials, designs and workmanship be used.

The recommendation implied, backed by the guarantee of our four generations of uninterrupted service, enables us to confidently solicit the preferred attention of all prospective users of

Brass and Galvanized, Marine,
Refrigerator and Cabinet Hardware
Complete Joiner Equipment
Small Boat Supplies and Attachments.

Our Catalog No. 18, fully illustrated, will be sent upon request to those interested in the use of hardware that will stand the tests of time and usage.

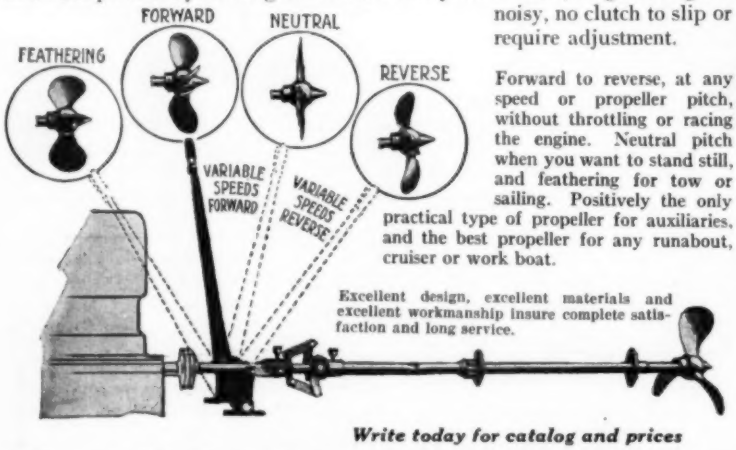
118 Chambers St. **W. & J. TIEBOUT** New York City

# *The Gordon* Reversible and Feathering *Propeller*

## *is more practical than any reverse gear*

IN any boat the Gordon Reversible Propeller is as good as, or better than a reverse gear. For some types of boats the Gordon is so far superior that there is no comparison.

The Gordon Propeller gives you complete and perfect control in the smallest, simplest, lightest unit made for the purpose. It takes up no room in the boat and adds practically no weight. It has fewer parts to wear, no gears to grow noisy, no clutch to slip or require adjustment.




Forward to reverse, at any speed or propeller pitch, without throttling or racing the engine. Neutral pitch when you want to stand still, and feathering for tow or sailing. Positively the only practical type of propeller for auxiliaries, and the best propeller for any runabout, cruiser or work boat.

Excellent design, excellent materials and excellent workmanship insure complete satisfaction and long service.

*Write today for catalog and prices*

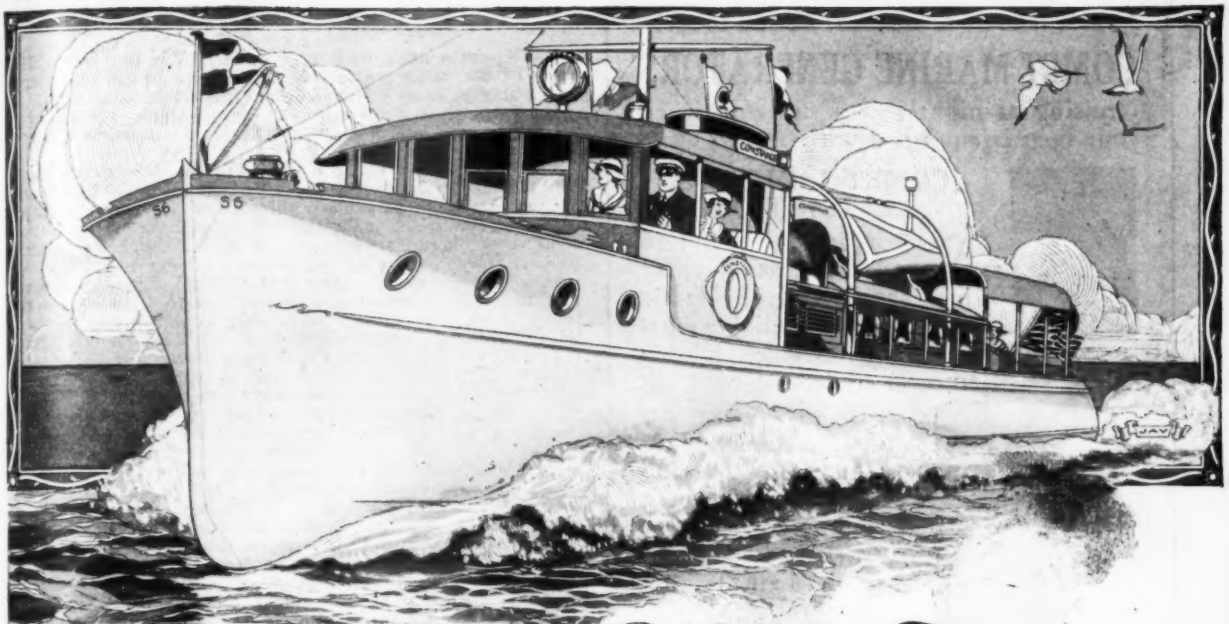
**SILENCER *and* UNDERWATER EXHAUST**

Does away with all noise, smoke, odor and heat, and does not cause back pressure to retard the motor. Water cooled.

***Price* $12.00**
F. O. B. Cleveland
**Complete with fresh or salt water fittings.**

***The* GORDON PROPELLER & MFG. CO.** 9001 DESMOND AVE., CLEVELAND, OHIO

*Advertising Index will be found on page 142*



# Wisconsin

CONSISTENT

## Marine Motors

| | | | |
|---|---|---|---|
| E M | 4 x 5 | 4 | cylinder |
| A M | 4¾ x 5½ | 4 | " |
| M M | 5¾ x 7 | 4 | " |
| G M | 4¾ x 5½ | 6 | " |
| P M | 5¾ x 7 | 6 | " |

## Dependable Power for The Cruiser

The real important issue when building or buying a cruiser is—the power plant.

The motor must be in keeping with the boat; it must prove a dependable unit in service—give unfailingly consistent power to the hull, or the object of the owner is defeated.

Wisconsin Motors give a real touch of completion to any type of hull; they justify the owner's pride of possession in the ideal service they give in fair weather and under conditions that require the best a motor can give.

In single and twin screw installations, Wisconsin Motors are known to the boating fraternity for their steady reliability. They never disappoint; the large number in use everywhere is testimony to their unusual satisfactory performance.

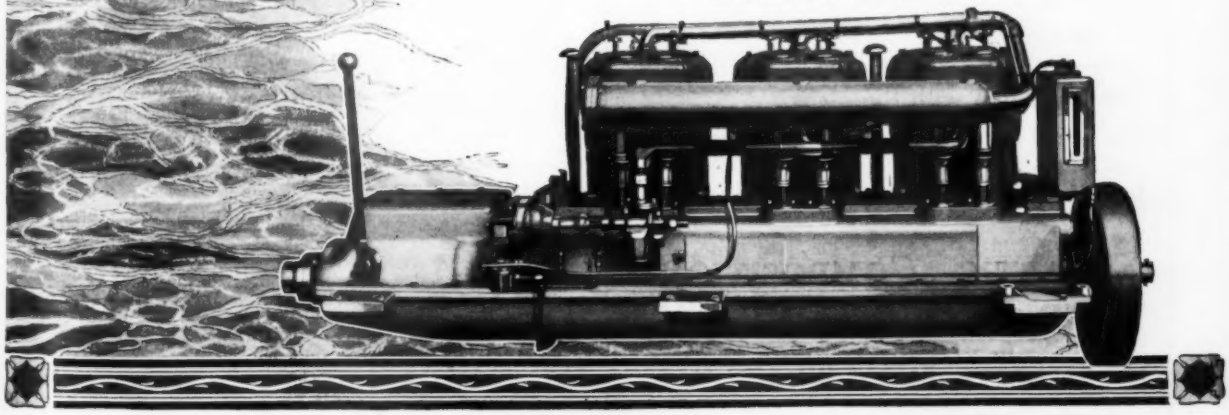
**Wisconsin Motors inspire confidence when the unusual is required**

*Write for Specifications*

**WISCONSIN MOTOR MFG. CO.**
**Milwaukee, Wis.**

***DISTRIBUTORS***

T. M. Fenner, Factory Representative, 21 Park Row, New York, N. Y.
Earl P. Cooper Co., Los Angeles, Calif.
Chandler-Hudson Co., Seattle, Wash.



*"Those Who Go to Sea Must Be Able to See."*

**COMET MARINE GENERATORS**

Cruising at night is joy supreme when your boat is equipped with

**COMET LIGHTING and IGNITION**

Generators in both 8 and 16 volts and capacities 5 to 15 amperes. Switchboards small, neat and reliable, furnished with Comet trouble lamp on 10 feet of cord.

Boats demanding more light than the 16 volt 15 ampere generator will find our 32-40 volt, ball bearing generator to exactly meet the requirement. We also manufacture DC magnetos. Have you sent for your set of bulletins?

**COMET ELECTRIC CO.**
**1241 St. Paul St. Indianapolis, Ind.**

ELASTIC SEAM COMPOSITION TRADE MARK

**Manufactured by H. B. Fred. Kuhls**

**Keep Your Decks Tight**

Elastic Seam Composition remains elastic and flexible, adhering to the sides of the seams and yielding to the swelling and shrinking of same. It will last from eight to twelve years, keeping the decks tight and wearing down with the planking.

We would be pleased to submit estimate for caulking and filling of Decks, guaranteeing same for a period of years.

**ELASTIC COMPOSITION AND REPAIR COMPANY**
**H. B. Fred. Kuhls, Manager**
**6411-23 Third Ave., Brooklyn, N. Y.**

## *Overhaul Your Own Boat*

(*Continued from page 66*)

Don't paint a damp surface; wait until it is dry; when the pores of the wood are filled with moisture oil cannot enter; this is also the cause of trouble when paint blisters and peels.

Don't varnish on a cold raw day under 60 degrees temperature.

Don't varnish late in the day. The new varnish should set before night.

The matter of the motor is one which the wise motor boatman has taken care of long ago. The natural method of overhauling the engine particularly the smaller one in the average boat is to take it out in the fall and ship it home. Here in the comfort of the cellar furnace and during the heavy winter weather it can be cleaned and polished to your hearts content with a final coat of new paint in the spring. Again we believe that the average motor boat engine suffers from too much take-it-apart. It is entirely unnecessary to pull an engine down which has been operating a matter of only about 300 odd hours during the season and was in very good condition when stopped in the fall. Aside from such matters as replacing worn gaskets and wires, a grinding of valves and checkvalves and a general tightening and careful inspection of all bolts, screws and nuts, the average motor will give better results than if it is completely knocked down each season. Should some faults have developed in the motor which make it necessary to take it down, go about the job as methodically as possible. Carefully mark the position and location of each part as it is removed. Do not, under any circumstances throw all parts into a box and after various shakings, etc., expect to be able to pick the proper ones out again when needed. Your luck cannot be depended upon to point out the desired one with certainty. Pistons should go back into the cylinder from which they came. Each valve back into the place it occupied before. The wear on the many parts of a motor is not uniform and parts cannot be expected to fit in places other than those into which they have worn a place. Particular care should be exercised in handling the camshaft gears and the setting of the magneto in its relation to the crank. One of the first operations necessary in a motor is the removal of carbon deposits from the inside of the cylinder heads and in the piston ring grooves. After this has been scraped a final wiping with kerosene will finish the task. Scoring of the cylinder walls must be corrected. There are firms which specialize in this work and can guarantee their work. If your motor is new the valves are not apt to require more than a slight polishing. An old motor may need to have the seats recut and the valves resurfaced. The compounds prepared for valve grinding are very keen and cut very rapidly. It is necessary to guard against too much grinding and a too rapid wearing down of both the valves and their seats. Passages to the cylinder should be closed with cloths so that none of the abraisive can find a way in. In grinding valves a light spring can be slipped under the head, which will raise it from the seat when the pressure on the turning tool is released.

Main bearings in most marine motors are of ample size and probably will not require much attention. Should it be in poor shape a skilled mechanic had better be consulted as the motor's ability depends on the successful working of the main shaft. The unskilled amateur unaccustomed to working to the high degree of precision necessary on his part is not likely to produce a high class job.

Piston rings suffer rapidly from wear. They should be examined for burnt spots on scores and replaced if necessary. Gas which blows past the rings does no good in turning the propeller. It does an injury in that it dilutes the lubricating oil in the motor base and this in turn will lead to seized bearings and similar troubles. Skill is required in placing piston rings as the ends of the ring should just come together without leaving a gap or binding when the ring becomes heated in service.

Many adjustments and much study are necessary before the motor is again fit for service. Valve guides must be free and true and if there is too much freedom new valves with oversize stems must be fitted. Leakage in the inlet valve is the cause of poor starting and irregular running when slowed down. Wrist pins should be a snug fit. Thumping and pounding and other annoying noises are caused by loose pins. The oiling system should be washed out and thoroughly cleaned with kerosene. There is always an accumulation of sediment in the sump which should be removed to ward off trouble later on. If the oil used is strained before being introduced into the system you can be reasonably certain not to be troubled with an interrupted oil supply. In wiping and cleaning about the motor do not use cotton waste. This has the unhappy faculty of shedding little ends of thread and these are certain to get inside the engine and will surely clog up an oil line or something else as important at the wrong time. Use cloth which is as free from lint as possible.

In general the usual and principal essentials have been covered and it is hoped that some measure of benefit will be derived by that vast army of enthusiasts who are now actively preparing for a new season of pleasure.

*Advertising Index will be found on page 142*

# Again Proves Himself A Friend To The Lover Of The Outdoors

PERHAPS no event in the sportsman's world will be hailed with such satisfaction as the announcement that Ole Evinrude, the inventor of the first successful outboard or detachable motor, has again actively identified himself with the detachable motor field by the introduction of a new outboard motor—the product of his inventive genius.

It is not generally known that Mr. Evinrude, after years of pioneering and the subsequent development of the most successful motor of its kind in the world, disposed of his interests in the company which stills bears his name. Having spent twenty years of close application to the gasoline engine industry, producing some of the earliest motors in the country, he felt the need of a long vacation.

Mr. Evinrude withdrew from his old company and spent a number of years enjoying the life of a true sportsman in the great outdoors. Keen as he was for the care-free life in the open, the native genius within him became increasingly restless and began again to assert itself. By natural instinct, he turned his attention to the creation of a new detachable motor which would eclipse any previous effort in this direction.

By the application of his combined genius and experience, Mr. Evinrude has produced a motor that will be conceded the same right to leadership in the future that was accorded to the motor of his earlier invention and which has spread his name and fame broadcast over the world. His latest achievement has eliminated the disadvantages of even today's recognized leaders in detachable motors while it incorporates many distinctive features which the sportsman has craved but has been unable to secure in any one outboard motor of today.

A motor, to be comfortably portable, he knew must first of all be light in weight, and that ideal has been achieved in his new motor. Yet that is not all. It is so ingeniously designed that, though lighter-weight, it has greatly increased power. Its twin-cylinder construction, minimizes vibration, insuring the satisfying comfort of a quiet motor. With the true hunter's and fisherman's instinct, Mr. Evinrude has made this a perfectly weedless motor.

Many other improvements and refinements mark the perfection of this little machine, with the result that Mr. Evinrude gives to the world today a motor of wonderful compactness, sturdy construction, marvelous power and so quiet and smooth in operation that it may be attached to the lightest and frailest boats without injury. It is indeed the masterpiece of a genius whose fame is marked by achievement.

The sportsman, the outer, the hunter, the camper —all will receive this announcement with enthusiastic delight and will eagerly await fuller details.

***Dealers will find much to their advantage by negotiating now for selling rights. Write today.***

**THE OUTBOARD MOTOR COMPANY, Dept. F Manufacturers' Home Bldg.**
**Ole Evinrude, President. MILWAUKEE, WIS.**

# Vibration *Is Distressingly Annoying In MOTOR BOATING*

A MOTOR BOAT records faithfully every vibration arising within itself. It is cleaving its way through an unyielding, non-compressible substance, which but magnifies the vibratory effect.

**Why suffer the annoyance of unnecessary vibrations, caused by lack of balance in crankshaft or propeller?**

If the U. S. Naval authorities have found it desirable to insist upon perfect balance of turbines, propellers and crankshafts in naval vessels, does it not behoove the motor boat owner to take similar precautions?

Marine Motor Manufacturers attempt to balance their engines. If they have NWA Balancing Equipment, they are certain to succeed.

***Ask whether your motor was Akimoff balanced, which means "balanced on a machine bearing our trademark, NWA".***

WE SOLVE VIBRATION PROBLEMS

Trade Mark Registered

**VIBRATION SPECIALTY COMPANY**

**Harrison Building** **Philadelphia, U. S. A.**


# Simplified Safety at Sea

(*Continued from page 26*)

these stations apparatus has now been installed to make the lights flashing or occulting. This effect is produced in the case of flashing lights by revolving all or a part of the lens, which is specially constructed with panels of prisms for concentrating the rays into beams; and in the case of occulting lights by some form of traveling screen or shutter which obscures the light at intervals.

The usual phases so attained are as follows: Fixed, showing a continuous steady light; flashing, showing a single flash at regular intervals; fixed and flashing, showing a fixed light varied at regular intervals; by a single flash of greater brilliancy; group flashing, showing at regular intervals groups of flashes; occulting, showing a steady light suddenly and totally eclipsed at regular intervals; and group occulting showing a steady light suddenly and totally eclipsed by a group of two or more eclipses at regular intervals. The foregoing refers only to lights which do not change color, commonly white, but further diversification is obtained by the use of red screens, changing the color from white to red in various combinations, such lights being known as alternating. In the case of gas or electric lights, the supply of gas or current is cut off at intervals by specially designed mechanisms whereby the characteristic may be adjusted as desired.

The terms flashing and occulting refer to the relative durations of light and darkness, a flash being an interval shorter than the duration of an eclipse, and an occultation being shorter than, or equal to, the duration of light.

In approaching a light of varying intensity, such as fixed varied by flashes, or alternating red and white, due allowance must be made for the inferior brightness of the less powerful part of the light, which at a distance may show flashes only or white only, in the respective instances cited. Flashing lights may show a faint continuous light, due to reflection from the lantern, in clear weather and at short distances. White lights may have a reddish hue in some conditions of the atmosphere, and where lights change from white to red, by sectors or otherwise, there is a small amount of uncertain color on each side of the line of demarcation. Red sectors are produced by screens of colored glass; they are often employed to mark outlying dangers near the light, or the limits of channels, and are usually arranged so that the light shows white while a passing vessel is clear of such dangers, changing to red as the shoal or other obstruction is approached. Also, at the edge of a sector of visibility, the light is not cut off sharply, but gradually fades away.

To assist identification in daylight, towers are frequently distinguised by characteristic painting, in addition to peculiarities of form or outline. The effect of several colors, when combined in bold patterns of spirals, bands, or blocks is quite striking in a number of important lighthouses.

## VISIBILITY AND CANDLEPOWER OF LIGHTS

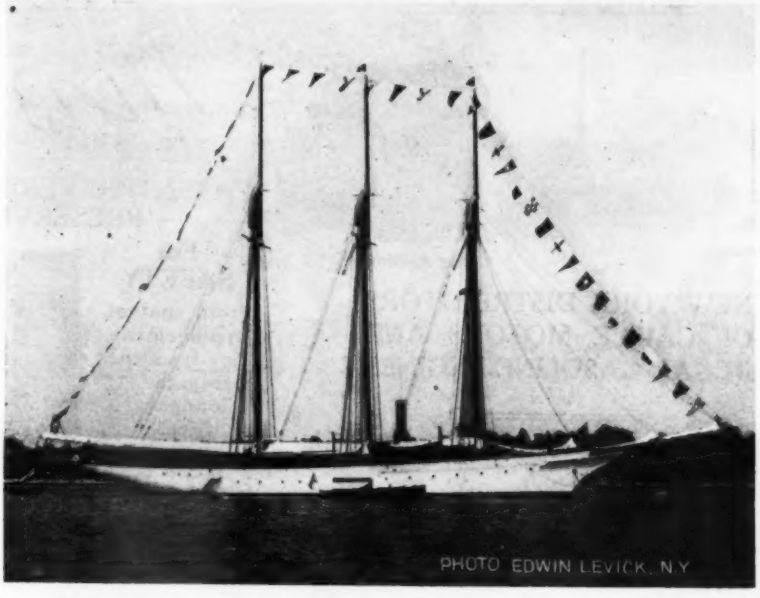
(*See Fig.* 81 *and tables page* 94)

Under normal and atmospheric conditions the visibility of a light depends upon its height and intensity; the distance due to the former being known as the geographic range, and to the latter as the luminous range. As a rule, for the principal lights the luminous range is greater than the geographic, and the distance from which the principal lights are visible is limited by the horizon only, and under some conditions of atmospheric refraction, the glare or loom of the light and occasionally the light itself may be visible far beyond the computed geographic range of the light. On the other hand, and unfortunately more frequently the case, these distances may be greatly lessened by unfavorable weather conditions due to fog, rain, snow, haze or smoke. Weak and colored lights are more easily obscured by such conditions. The distances of visibility are given in nautical miles.

The intensities of lights were formerly indicated merely by the order of the optical apparatus. So long as the lenses were similar in arrangement and the same type of lamp was used this gave a convenient basis of comparison, but with the introduction of more modern apparatus, with flash panels of great power and illuminating apparatus of increased intensity, such distinctions became uncertain so far as indicating the relative brightness of lights. The statement of orders has now been generally superseded by a statement of the approximate candlepower in Enlish candles. The actual determination of such candlepowers for large lenses is difficult, and it is in most cases estimated. Although only approximate, the final figures are, however, reasonably consistent, and from them the observer may judge the relative brilliancy and power of the various lights.

(*Continued on page* 94)

*Advertising Index will be found on page 142*




S. S. Alcyone, designed for Henry W. Putnam by Tams, Lemoine & Crane. Built by George Lawley & Son Corp'n. Equipped with Clothel Refrigeration.

# *Safe, Certain, Electrical Refrigeration is the Clothel Way*

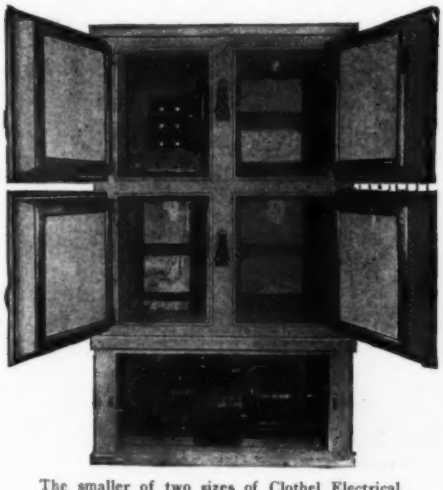
The Clothel is the most successful refrigerating system that science has developed.

You will find it on America's largest yachts and motor boats. It is an essential part of the equipment of many city and suburban homes.

The Clothel cools without ice—automatically and continuously—providing a uniformly low temperature that is colder, cleaner and far more satisfactory than any ice-cooled system in use.

It is durably built, carefully insulated and handsomely finished throughout.

The whole Clothel story is told in an interesting booklet, a copy of which will be mailed to you upon request.



The smaller of two sizes of Clothel Electrical Refrigerators for home use.

***The Clothel Refrigerating Company***

***61 Broadway, New York***

# G.H.MASTEN CO., Inc.

5 SPEED MOTOR

Caille Aristocrat

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PATENT REVERSIBLE LIFE PRESERVER

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Your Dealer Will Supply You. Or $2.00 By Mail.

G. H. MASTEN COMPANY, Inc.
38 EAST 9TH ST., N. Y.


# Frisbie's Win Southern Fish Boat Championship

(*Continued from page* 17)

done by means of a tiller. The cabin is a low affair apparently built just large enough to comfortably house the motor. The comfort and convenience of the crew is of secondary consideration. The fish are kept on the cockpit floor in a small compartment set apart for the purpose.

But the best part of the entire outfit seems to be that the boats always go. No such thing as a motor out of business or laid up for repairs seems to be known. They start out about sunrise every morning and get back to port in the late afternoon. They are on the go most of the time. From eight to ten gallons of gas is sufficient for a day's run.

So nearly of the same speed are the boats that the Race Committee decided that it would make a fine contest if a race between fish boats could be held. Therefore one was scheduled and an attempt made to get entries. But we immediately ran up against a stone wall. Even though the boats were nearly all alike as regards size, power and speed, yet we found that feeling ran high between the owners of the 5 h. p. and the 8 h. p. boats. There seemed to be a class distinction clearly established. The 5 h. p. owners would not think of racing if the 8's were allowed to enter. On the other hand, in the minds of the 8 h. p. owners the little 5's were pikers and had no rights on the sea anyway—why let them in? Then when we talked to the owners of the boats powered with the 11's and 12's about entering, an awful shout and laugh went up. "What, a race for the 8 h. p. tubs? No, never would they enter." New York's 400 were never more exclusive.

So the committee decided that in order to have a race at all, it must have three classes, one for boats up to 5 h. p. inclusive, one for boats from to 11 h. p. inclusive and one for boats with motors of 12 or more h. p. Three prizes were offered in each class.

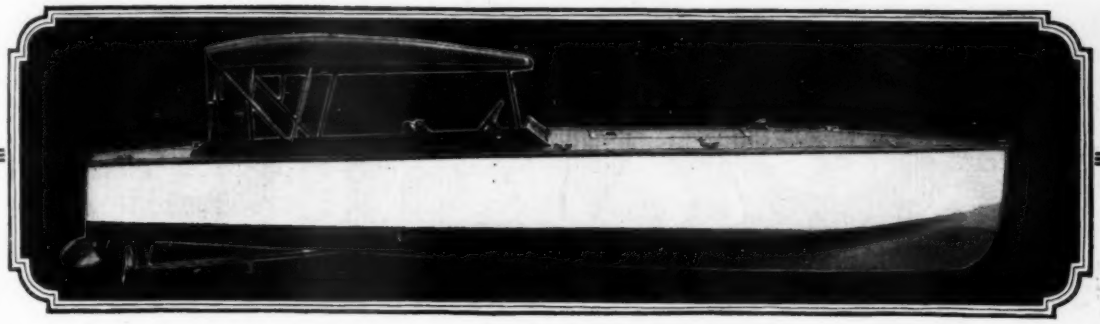
To make a long store short, eighteen boats showed up for the start. They differed from the ordinary race owner inasmuch as they all showed up some three hours before the start instead of three minutes as is the usual custom. They didn't ask a whole lot of foolish questions either. We told them that their classes would start at 2.00, 2.05 and 2.10 P. M. respectively. Their course was to be twice around the two-mile Fisher course, a total of four miles. Quite naturally, none of the boats had self starters and as they were not well versed in starting ethics, all present could see some fun coming. To mix matters a little more, none of the boats had either clutches or reverse gears. Not one of them dared to try a flying start for fear some unsuspected competitor might make a better start and thus gain an advantage which could never be overcome. So all the boats huddled together with gunwales practically touching and engines dead. The wind was from such a quarter that they all soon drifted broadside to the starting line.

The preparatory gun went at 1.55 and there was a wild scramble to get over the line. Much shouting and waving of arms from the judges' pier finally convinced them that that was not the starting gun, so back to the other side of the line they all went again, stopped their engines and soon all drifted together again. Promptly at 2 o'clock, Commodore Kotcher fired the starting gun but this time not a motion occured from any of them. More shouting and waving of arms by the judges. Finally one of the owners got the idea and started for the line. Then seventeen other motors were cranked and as many bows headed to get across the line. It made no difference whether the boats were supposed to be in Class A, B or C. One start, all start, was their slogan. Again the judges, timers and scorers all forgot their official duties and tried to call back the craft which started out of turn. As soon as they were successful in getting one in each of Class B and C to return, all the rest of the entrants in the same class returned also. It was a case of take no chances.

Finally, all boats were started correctly and the race was on in earnest. Crews lay along the rail as in a sail boat race to offer as little resistance to the wind as possible although the maximum speed that the boats were making was something like 6 miles an hour. Men were sent forward to keep the bow down and prevent squatting.

The finishes in all three classes was very close. Open water hardly separated the boats. The Frisbie powered boat in Class C won by the greatest margin and made the best showing. She was awarded the title of Champion Fish Boat of Florida which seemed to please her owner as much as the $100 prize presented by William Bruns of New York City.

*Advertising Index will be found on page 142*



# Mullins "V" Bottom Boat

## *Speedier, More Seaworthy, Drier*

Because of its distinctive, "V" shaped hull, the newest Mullins steel boat easily develops more speed than a round bottom boat with the same power unit. Its tendency to "plane" when under way results in a loss of displacement and a gain in speed.

Fast enough to satisfy the most enthusiastic speed "fan", yet dry, comfortable and *safe* enough to make an ideal pleasure craft for the entire family. Accurately balanced, easy to steer and free from all roll, it holds an ever even keel in a seaway. Puncture proof—light in draft—it is especially fit for cruising waterways filled with lurking shoals and shallows.

**MULLINS STEEL BOATS CAN'T SINK**

Permanent buoyancy is assured in every Mullins boat. Ample air compartments, fore and aft, make them safe as a lifeboat. The steel hull remains smooth, retains its lines and has no seams to open. No calking, scraping or offensive bilge water. Can't leak, warp, dry out, rot or waterlog. Low upkeep. No boathouse required. Powered with the finest of marine motors.

Designed and built in the world's largest boat factory, Mullins boats are in use on the waterways of all nations. Over 70,000 now in service.

Write for complete information about Mullins new "V" bottom boat. New catalog, showing many models of power boats, rowboats and canoes will be mailed to you on request.

**THE MULLINS BODY CORPORATION**

***Boat Department***

**622 Depot Street** **Salem, Ohio**

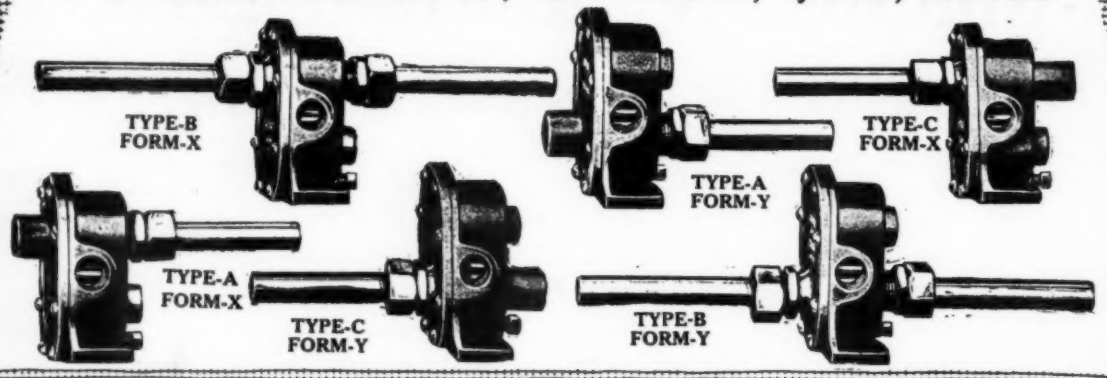
# PUMPS

The finest power plant made will not operate properly if it is equipped with an inferior pump, whether it supplies water, fuel or oil.

## OBERDORFER BRONZE GEARED PUMPS

are built especially for marine use—they are made to withstand the hard service encountered in use on board boat—*Oberdorfer Bronze Geared Pumps* are noiseless, automatic, compact and reliable. The supply of water, fuel or oil is governed entirely by the motor—*there is never an over or under supply.* If you have ever had trouble with your pump you will find a world of satisfaction in the trouble-proof Oberdorfer.
If you own a boat powered with an internal combustion engine you will be interested in our new book on pumps. Your copy is ready for you—it comes *free* on your request.

**M. L. OBERDORFER BRASS CO., 816 E. Water St., Syracuse, New York**




# "The Capitol"

## A Marine Unit Power Plant

***For Speed Runabouts and High Class Cruisers***

**Dash instrument and switch plate controlling ignition, lights, ammeter, oil gauge and dash lights**

### COMPLETELY ENCLOSED—COMPLETELY EQUIPPED

FROM the first glance the Capitol inspires the confidence of marine engine buyers. Its clean cut, well proportioned exterior with every moving part enclosed and every accessory built in immediately suggests the fact that it is the product of master designers. There isn't a smoother, quieter running marine engine. Vibration and noise are eliminated by perfect balance of moving parts, wide-faced helical-cut timing gears, force feed lubrication, ball bearing universal joint, three point suspension, and many other improvements over ordinary construction.

### Highest Grade Equipment

Delco ignition, Atwater-Kent two-unit starting, lighting and generating system, Willard storage battery, Stromberg or Schebler carburetor, instrument plate shown above and all other necessary equipments are included.

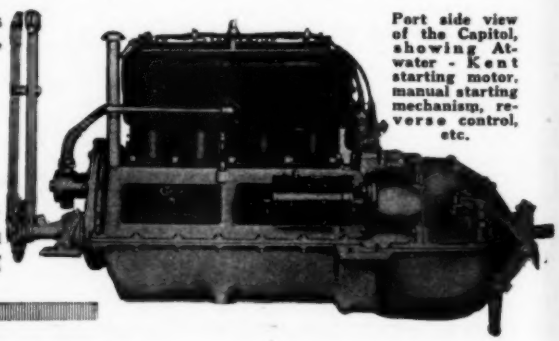
If you own or are planning the kind of a runabout or cruiser that deserves a really excellent power plant, you should know more about the Capitol, its special features of construction and how it is built.

| Bore 4¼" | Stroke 5½" |
|---|---|
| High Speed Model | 60-65 H. P. at 2000 R. P. M. |
| Medium Speed Model | 30-34 H. P. at 1000 R. P. M. |

*Write today for complete description and prices*

## Auto Engine Works, St. Paul, Minn., U.S.A.

**Eastern Representatives: Ventnor Boat Works, Atlantic City, N. J.; Fred C. Duclon, Alexandria Bay, Jefferson Co., N. Y.; Gray-Aldrich Company, Inc., 84 Atlantic Ave., Boston, Mass. Canada: The A. R. Williams Machinery Company, Limited, 64-66 Front St. W., Toronto, Ont.**



**Port side view of the Capitol, showing Atwater-Kent starting motor, manual starting mechanism, reverse control, etc.**


*Advertising Index will be found on page 142*

# DIESEL ENGINES for PLEASURE YACHTS

IDEALIA, 84′ x 14′ x 3′, is powered with a 120 H.P. NELSECO Diesel engine which drives her 14¼ miles per hour, using only six gallons of fuel oil per hour. It would take 15 gallons of gasoline to produce the same power, *at approximately ten times the cost.*

Everyone concedes the advantages of Diesel engines for commercial boats. The case of Idealia and other successful installations prove that NELSECO engines are equally suitable for substantial pleasure yachts and large cruisers.

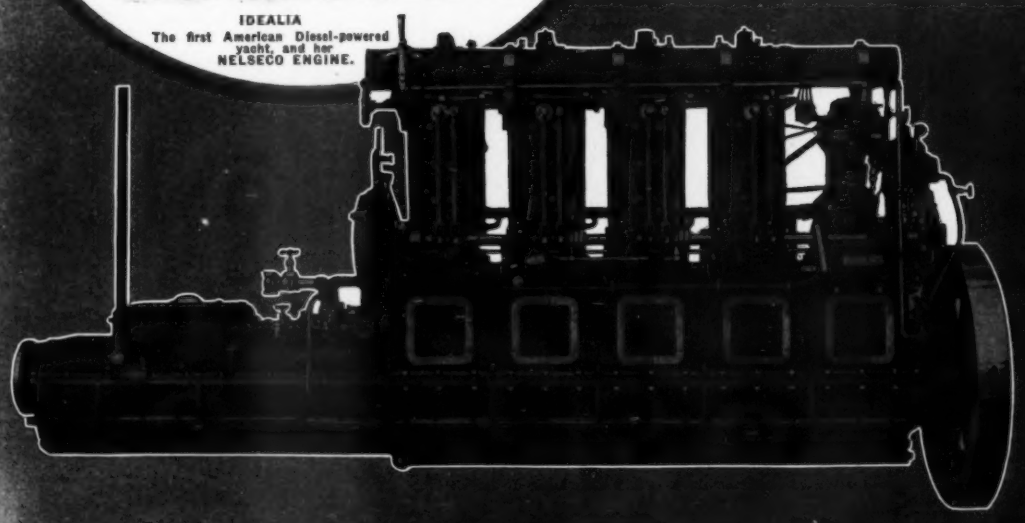
The broad experience of this company, the first to build a Diesel Engine in America for marine use, is at the disposal of those who are interested in investigating or planning a Diesel powered boat. Our engineers will take pleasure in working out your power problem if you will put it up to them. 120 B.H.P. to 3400 I.H.P.—over 150,000 B.H.P. in use or on order.

*Let us send you complete information.*
*Give us the details of your boat.*

**THE NEW LONDON SHIP & ENGINE COMPANY**
**Groton, Conn., U. S. A.**

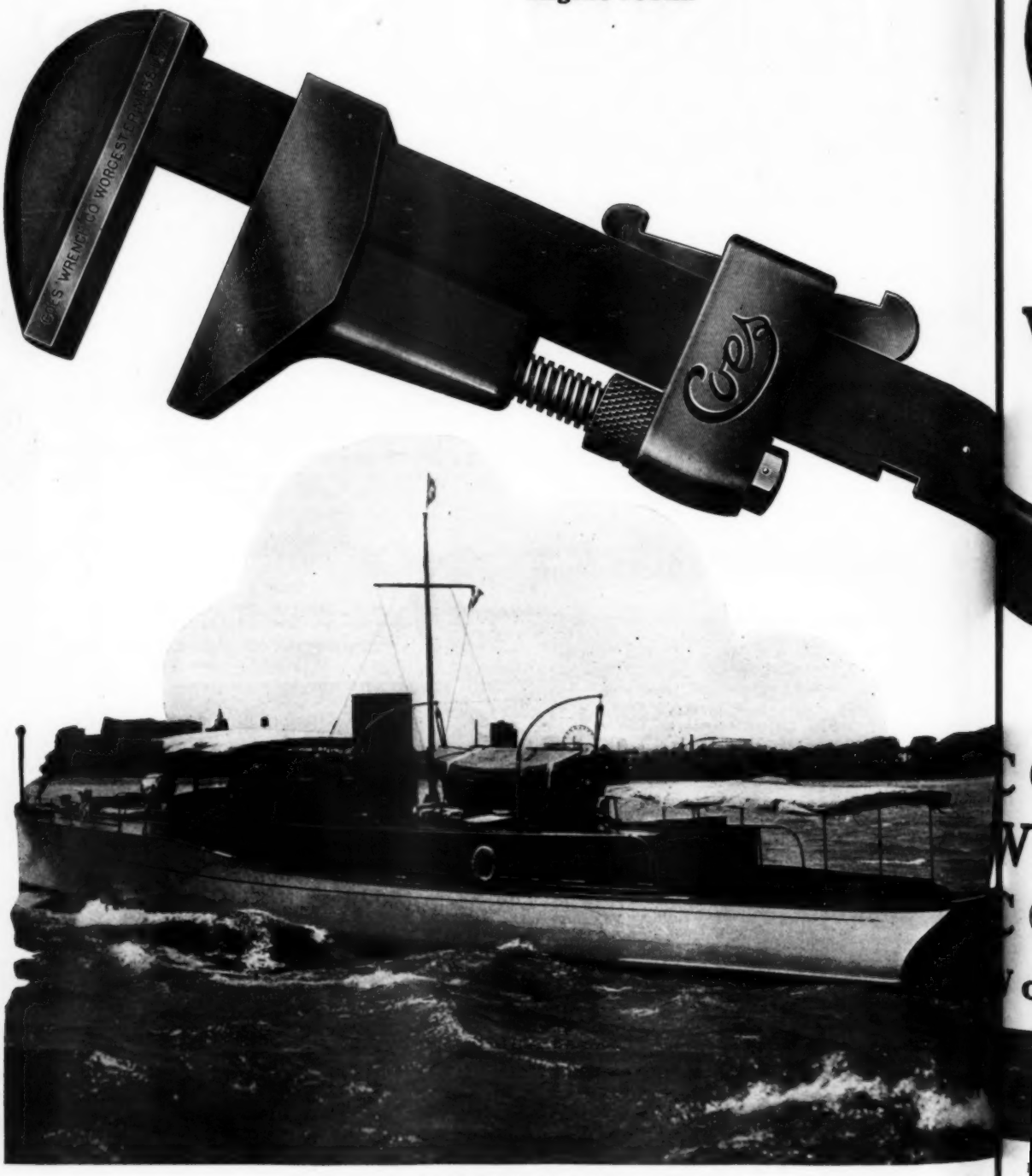
**Pacific Coast Office: 402 Exposition Bldg., San Francisco, Calif.**

**IDEALIA**
**The first American Diesel-powered yacht, and her NELSECO ENGINE.**



# YOUR BOAT IS NOT COM

**Sizes ranging from 4 in. to 72 in. will meet every need. All-steel, built on honor, they belong in every engine-room.**




*Advertising Index will be found on page 142*

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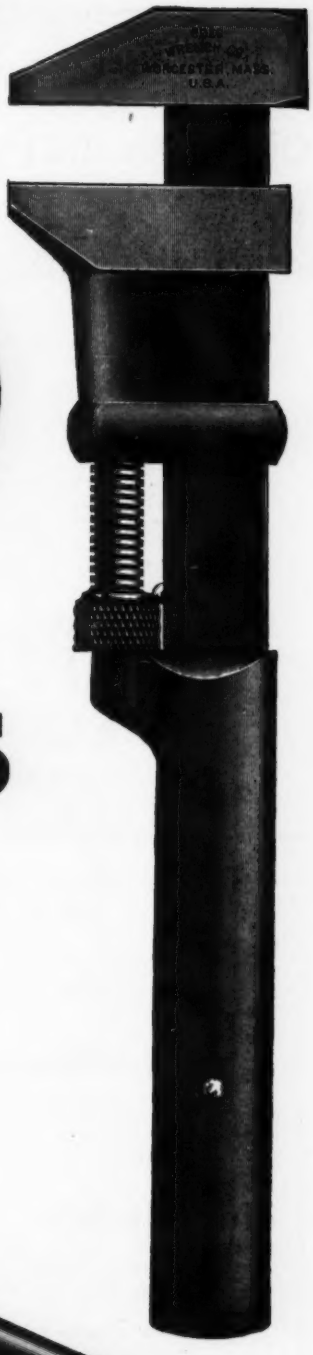

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*Rocks, Logs, Sand Bars*

*Have no terrors for the*

**Disappearing Propeller Boat**

A safe seaworthy little craft that makes 9 or 9½ miles an hour and goes 20 to 25 miles on a gallon of gas. Takes you anywhere there is water enough to float a rowboat.

The protected propeller moves up into a well and automatically throttles down the engine if you strike a snag, or beach the boat. Midships propeller like a centerboard makes it unusually stable in a sea. The boat for lakes, rivers, creeks, harbors, bays—for campers, hunters, fishing, family use and summer homes.

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**DISAPPEARING PROPELLER BOAT co**

**4851 Woodward Ave., Detroit, Mich.**

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**Huff, Daland & Company**

**announce the completion of their facilities for the production of high grade**

**Motor Boats and Flying Boats**

**Mr. Joseph Leyare, well known among boat owners as the proprietor of the former Leyare Boat Works of Ogdensburg, has been retained as designer and superintendent of the motor boat department.**

**The personnel of this organization combines experienced administrative officers and boat builders of unusual skill.**

*Let us figure on your 1921 boat.*

**HUFF, DALAND & COMPANY,** Incorporated

OGDENSBURG, NEW YORK

**Motor Boats Flying Boats Airplanes**


## *Protractor Chart Is Simple*

(*Continued from page* 64)

Correct trimming of the valves and spark of a four cycle motor is an easy mateter for the experienced motor mechanic but for the average boatman it usually presents a difficult problem.

With the aid of the chart Fig. 1 and the following, timing of the valves and spark of any four cycle motor will be as easy as falling off a log.

First the timing of the valves giving the exact amount of lag or lead should be ascertained from the engine manufacturer or shuold be recorded from the engine before taking down.

The accompanying chart is laid out for a left hand medium duty motor. The inlet valve opens ten degrees past bottom center; the exhaust valve opens at twenty degrees before bottom center and closes at five degrees past top center.

The chart should be made of stiff cardboard or beaver-board cut out the same size as the diameter of your flywheel; the two circles with the crossover and various other marks and notes should be very carefully drawn, do not leave anything off and be sure to carry all the angle measurement lines to the outside edge of the chart. Make your chart of the proper rotation to suit your motor left or right hand as required.

To time the valves turn the flywheel so that the first cylinder is on top center; Fig. 2, fasten the chart to the flywheel, it at first would seem proper to put the point of the chart marked top center at he exact top center, but this is not essential, instead put the chart top center point opposite or on a line with some stationary object on the cylinder or some other permanent point which we will call the reading point Fig. 3, then all readings will be taken from the chart at this reading point. point.

It is necessary to know exactly when a valve is opening or closing. Have a space between the valve stem and the valve lifter about the thickness of a visiting card. Put a piece of paper into this space Fig. 4 slide it back and forth turning the flywheel slowly in the proper direction and as soon as the paper sticks stop! This is the position of the flywheel when the valve starts to open. Now turn the flywheel keeping a tension on the paper an das soon as it is released stop! This is the position at closing.

Now turn the flywheel in the proper direction and observe which stroke is taking place, the power or suction stroke turn until the suction stroke begins again now follow the suction stroke line making sure the inlet valve opens and closes at the proper time as indicated on the chart, be sure to take all readings at the reading point; now the compression and power strokes take place; see that both valves remain closed until the exhaust opens at the proper time; then the exhaust stroke takes place the valve closing past top center as shown. You will now see that by looking at the chart the position of the valves can be checked without much chance of error.

Most cam shafts have the cams keyed to them and they are not movable and the timing will be done by resetting the timing gears. After the first cylinder is timed the other cylinders will follow in the proper order so the only thing to do is to test the remaining cylinders making a slight adjustment in the height of the valve lifters so that all the valves will open and close nearly alike.

One time I had occasion to check the time of a four cylinder motor and found the inlet valve of the last cylinder quite a bit out but it was due to the cam shaft bushing being burnt-out permitting the shaft to wabble and therefore it did not lift the valve as much as it should. Another time I found one of the cams set too far ahead causing the exhaust valve to open and close too soon. This cam was set on the shaft with two set screws and a tapered pin through and it was not a difficult matter to change.

It is a good thing to test the valve lifters immediately after running the motor while the valve stems are still hot to make sure they permit the valves to close.

Now in timing the spark start with the first cylinder if using battery and coil ignition advance the spark with the timer as far as possible turn the flywheel on the compression stroke observe when the spark takes place now retard the spark turn the flywheel and observe the spark again. The chart shows 22½ degrees of advanced and also of retarded spark; this is not intended to be a definite figure, as the amount of movement will vary with different makes of engines, but it is a good idea, although not essential, to have as much advance as retard, that is, there should be sufficient retard to permit the engine to be cranked without the danger of kicking back.

Now on high tension ignition the usual instruction is to have the first cylinder on top center spark lever on magneto in full retarded position then the platinum breaker points should be just ready to open. A. G. W., College Point, L. I.

*Advertising Index will be found on page 142*

THE REMEDY

for that uneasy feeling that you have at this time of the year is to go down to the boat yard, take the cover off and see how the good old boat has stood the winter.

Then get out your **Carpenter Catalog** and make a list of what you need and send it in to us.

Our new discount sheet showing reduced prices offers a strong inducement to purchase early. *Send for it. Our Catalog sent free to boat owners.*

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MARINE SUPPLIES

| | | | | | |
|---|---|---|---|---|---|
| Paint | Composition | Scrapers | Sandpaper | Oakum | Pitch |
| Varnish | Turpentine | Brushes | Steel Wool | Spun Cotton | Tar |
| Anti Fouling | White Lead | | | Caulking Tools | Marine Glue |

And everything else used by builders or owners.

200 W. Austin Ave. CHICAGO

EQUIPMENT FOR EVERYTHING THAT FLOATS

# Simplified Safety at Sea

(*Continued from page* 84)

## FOG SIGNALS FOR VESSELS

(*See Figs. 63-62*)

Fog signals, though of the greatest value to the mariner, are subject to a number of aberrations, so that they can not be relied upon implicity. Every endeavor is made to start fog signals as soon as signs of fog have been observed at the station, but such signals should be regarded by mariners as auxiliary aids only and soundings should be taken in all conditions of doubt. A fog often creeps imperceptibly toward the land and a vessel may have been in it some time before it is observed at the signal. Sound is conveyed irregularly through the atmosphere and mariners cannot place dependence on judging their distance from the fog signal by the power of the sound. Under certain conditions of the atmosphere the sound may be lost a short distance from the signal, as there may be silent areas or zones; or the sound may carry much farther in one direction than in another, and these conditions may carry in the same locality within short intervals of time.

However, by due caution in navigation and the prudent use of the lead, sufficient warning of danger is generally obtained. In order to guard against the possibility of breakdowns, all modern fog-signal installations are in duplicate, so the second signal may be started at once in event of accident to the first. Care is taken to give each signal an equal amount of use, as far as practicable. These precautions are taken owing to the difficulty of making quick repairs at the station.

The illuminating and fog-signal apparatus on board light vessels has undergone many improvements. Ordinary ship's lanterns served for lights on the early vessels, while the fog signal was a hand bell or horn. When reflector lights were introduced, each light was composed of eight lamps with reflectors 12 inches in diameter. In recent years a tubular steel mast, of diameter sufficient to contain a ladder, has been installed. This is surmounted by a helical bar lantern of the type used in lighthouses on shore, containing a regular lighthouse lens. Access to the lantern is through the interior of the mast, and the lantern is surrounded by a gallery reached from the interior to permit cleaning the glass, and serving also as a distinguishing daymark. Any illuminant may be employed in such a lantern, such as electric light, incandescent oil vapor, acetylene, or oil gas, as desired.

Corresponding improvements have also been made in fog signals on board light vessels. steam whistle is still used on many light vessels as the main signal, and a pneumatically operated submarine bell is frequently added as an auxiliary. Many of the most important light vessels on the Atlantic and Gulf coasts, are equipped with radio.

## LIGHT VESSELS AS DAY MARKS

The unlighted aids to navigation shown in Fig. 80 will be found fully described in the buoy list of Delaware Bay and River. The lighted aids are described in the Light List as shown below.

Light vessels are distinguishable in the daytime by their unusual shape and rig, including generally some form of cagework as a daymark at the mastheads, and by their characteristic painting and lettering. The hull is often painted red or straw color, although many other colors or combinations of color are employed to make adjacent vesels as different as possible, and a short station name is painted on the sides of the vessel in the largest size letters practicable.

The Light List gives complete information about light vessels, the characteristics of their lights, a description of their appearance in the daytime, data as to their fog signals, etc.

(*Continued on page* 122)

Lightship shown in Fig. 82 will be described in the light list thus:

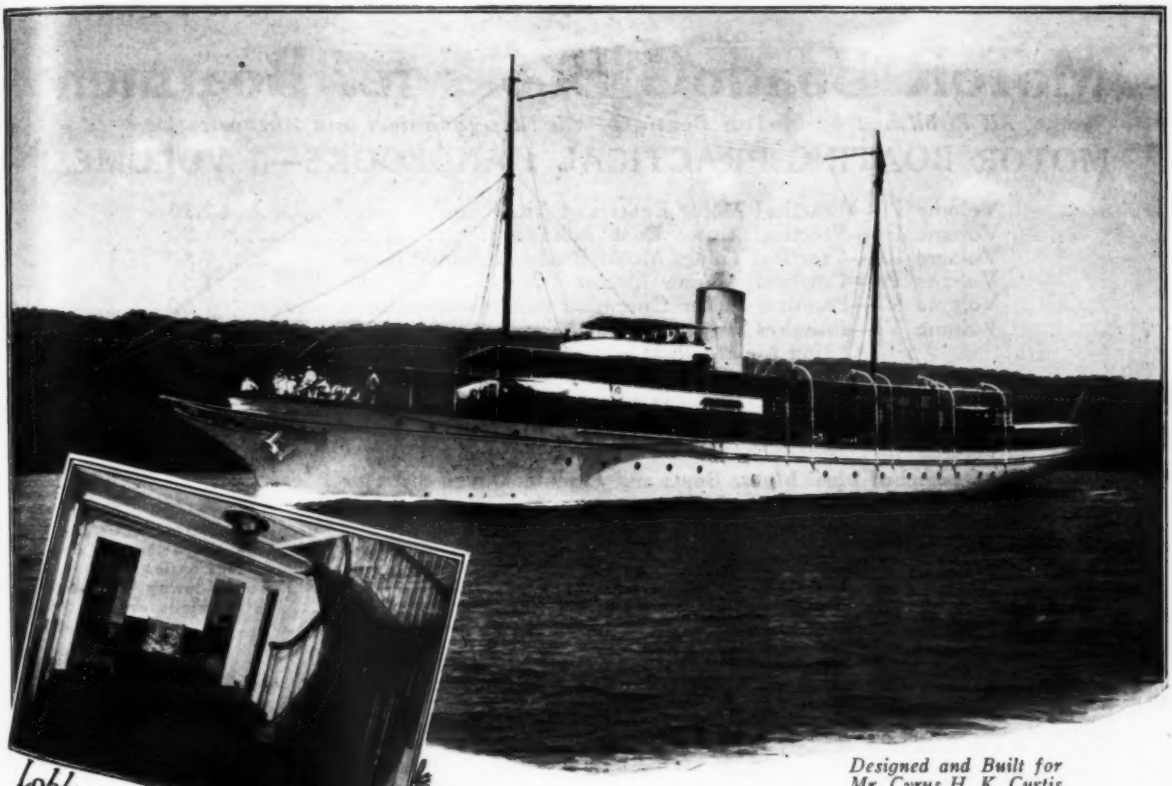
| | Name. Character and period of light. | Location. Latitude, N. Longitude, W. | Light above high water. | Miles seen. | Candle-power. | Description of structure, vessel, or buoy. Top of lantern, above base. | Fog Signal. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| CHANNEL | **New York Lower Bay Approach** | | *Feet* | | | *Feet* | | |
| | **Scotland Light Vessel** | In 10½ fathoms, off entrance to bay. (N.J.) | 63 | 11 | W. 480 | Lead-colored hull, "SCOTLAND" on sides; two masts, black cylindrical daymark at foremasthead | Bell; 1 stroke every 10 sec. | Light..... 3 sec.<br>Eclipse..... 3 sec.<br>AZNB |
| | Occ. W., 6 sec. (foremast) | 40° 26′ 39″ | | | | | | |
| | F.R. (mainmast) | 73° 55′ 10″ | 45 | 11 | R. 300 | | | |

Ship John Shoal Light shown in Fig. 78 will be described as follows:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Ship John Shoal**..... Occ. W., 15 sec., R. Sector | In 1¼ fathoms, on shoal, (N.J.) 39° 18′ 19″ 39° 22′ 37″ | 50 | 13 | W. 2,900 R. 870 | Brown; octagonal dwelling, on cylindrical pier. | Bell; gp. 3 strokes every 45 sec. | Light..... 10 sec.<br>Eclipse..... 5 sec.<br>*Red* east of 138° and 322°, covers shoals on east side of channel |

The Range Lights shown in Fig. 79 will be described thus:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RANGE | **Murderkill River Front** U. Fl. W., 1 sec. | On northwest bank of river. (Del.) | 24 | ..... | 30 | Black iron post..... | ..... | Flash 0.3 sec. duration |
| | **Murderkill River Rear.** U. Occ. W., 2 sec. | 740 yards 247° from preceding. | 60 | ..... | 30 | White post..... | ..... | Light..... 1 sec.<br>Eclipse..... 1 sec. |
| RANGE | **St. Jones River Front.** U. F. R. | On north bank of river (Del.) | 11 | ..... | 10 | White post..... | ..... | |
| | **St. Jones River Rear.** U. F. W. | 60 yards 266½° from preceding. | 26 | ..... | 40 | White post..... | ..... | |
| | **Cape Henlopen**..... F. W., R. Sector. | On cape. (Del.)..... 38° 46′ 42″ 75° 05′ 03″ | 126 | 17 | W. 13,000 R. 4,000 | White; tower and dwelling in depression in top of high sand hill. 93 | ..... | *Red* from 128° to 173°; covers Harbor of Refuge and Brown Shoal. |
| | **Delaware Bay** | | | | | | | |
| | **Delaware Breakwater**..... Occ. W., 5 sec., R. Sector. | On east end of breakwater. (Del.) 38° 47′ 50″ 75° 06′ 01″ | 61 | 13 | W. 7,200 R. 2,200 | Brown, conical tower; white pier. 56 | 3d-cl. reed horn: Blast.... 2 sec. Silent... 13 sec. Bell (hand) if horn is disabled; 1 stroke every 10 sec. | Light..... 2.5 sec.<br>Eclipse..... 2.5 sec.<br>*Red* south of 248½° and 101°, covers shoal off point of Cape Henlopen and Breakwater Harbor. |
| | **Delaware Breakwater West End.** U. F. R. | On breakwater. (Del.)..... | 30 | ..... | 50 | Red, iron column..... | ..... | |
| | **Harbor of Refuge**..... Fl. W., 12 sec., R. Sector. | On south end of breakwater. (Del.) 38° 48′ 52″ 75° 05′ 34″ | 61 | 13 | W. 22,000 R. 6,600 | Black lantern, on white hexagonal wooden dwelling, on brown cylindrical pier. 52 | 1st-cl. air siren; gp. 3 blasts every 60 sec.; blasts each 2 sec. duration, silent 38 sec. Bell if siren is disabled; 1 stroke every 15 sec. | Flash..... 1 sec.<br>Eclipse..... 11 sec.<br>*Red* from 330° to 341°; some red tint on either side to 328° and 347°, covers Hen and Chickens Shoal. |
| | **Harbor of Refuge North End.** U. F. R. | On breakwater. (Del.)..... | 35 | 7 | 50 | Black post..... 24 | ..... | |



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*Mr. Cyrus H. K. Curtis*
*Philadelphia, Pa.*

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**This book gives complete information for building the following boats:**

**10-foot mark boat, 12-foot outboard motor boat, 12-foot speed boat, 12-foot bangabout, 13-foot sea skiff, 16-foot sharpie, 18-foot runabout, 20-foot monoplane, 20-foot hydro-runabout, 20-foot knockabout, 20-foot tunnel stern, 22-foot V-bottom runabout, 25-foot V-bottom cruiser, 25-foot round-bottom cruiser, 28-foot cruiser (Consort II).**

Every article is fully illustrated with working drawings and no information or instructions are missing which would be of assistance to the novice to build his own boat.

Both of the Ideal Books are printed in large type on extra fine paper. They have been edited by Charles F. Chapman, editor of MoToR BoatinG.

**Price of Ideal Books, $2.00 per volume or $5.00 per set of 3 volumes.**

### A New Book of Boat Plans
### Twelve Complete V-Bottom Designs
### Ideal Series, Vol. 3

**by William H. Hand, Jr.**

**Plans Prepared Expressly for MoToR BoatinG**

This new book is the most valuable ever published for the amateur builder or anyone desiring to have a V-bottom boat built by his own builder.

The plans contain outboard profile, lines, inboard, construction and interior arrangement plans, sectional views and complete table of offsets. Accompanying each design is a description of the boat and a full set of specifications taking up step by step each feature of the boat's construction, how it should be built and the proper material to use.

Plans and specifications of the following boats are included: **Edith, a 15-foot runabout; Jane, an 18-foot runabout; Katharine, a 30-foot cruiser; Dorothy, a 25-foot runabout; Zenith, a 25-foot cruiser; Cyclone, a 36-foot auxiliary; Eclipse, a 40-foot express cruiser; Magnet, a 28-foot cruiser; Tornado, a 45-foot auxiliary schooner; Broncho, a 29-foot cruising runabout; Shark, a 21-foot utility runabout; Claire, a 36-foot express cruiser.**

**Price of Twelve Complete V-Bottom Designs...$2.00**

(If ordered with the 2 other volumes of the Ideal Series, the price of the 3 books will be $5.00.)

### Motor Boatmen's Charts and Log Sheets

***Published by MoToR BoatinG***

Charts printed on heavy cardboard 8½" x 11" and punched to fit standard loose leaf folder.

Contain name and location of all principal ports and harbors, distances, compass courses and sailing directions. Invaluable for use on small boats and motor yachts. The set now includes the following charts:

**Series A**

**No. 1—Western End of Long Island Sound.**
**No. 2—Eastern End of Long Island Sound.**
**No. 3—Block Island Sound.**
**No. 4—New York Harbor.**
**No. 5—Boston Harbor.**
**No. 6—Buzzards Bay.**
**No. 7—Block Island to Vineyard Sound, including Narragansett Bay.**
**No. 8—Delaware Bay.**
**No. 9—Chesapeake Bay, Part I, Upper Part.**
**No. 10—Coast of Maine, Portland to Rockland.**
**No. 11—Hudson River, Kingston to Albany.**
**No. 12—Chesapeake Bay, Part II, Central Part.**

**Series B**

Series B Charts Nos. 13 to 24 are in the course of preparation, and will be forwarded as ready. Series B is as follows:

**No. 13—Lake Erie—Eastern Part.**
**No. 14—Lake Erie—Western Part.**
**No. 15—Hudson River, New York to Kingston.**
**No. 16—Lake Champlain.**
**No. 17—Erie Barge Canal.**
**No. 18—Massachusetts Coast.**
**No. 19—New England—Newburyport to Portland.**
**No. 20—Cape Cod Bay.**
**No. 21—Maine, Monhegan to Eastport.**
**No. 22—Chesapeake Bay, Part III, Lower Part.**
**No. 23—St. Lawrence River and Thousand Islands.**
**No. 24—Biscayne Bay.**

MoToR BoatinG has also published a log sheet to fit the standard 8½" x 11" loose leaf folder. Each sheet contains spaces for such data as time of passing various aids to navigation, names of aids, magnetic and compass courses, distances, patent log readings, speed of boat, revolutions of motor, wind direction and force, condition of weather and sea, depths of water, fuel, time of high and low water, etc., etc.

### Prices

**Charts 25 cents each or $1.50 per set of 12 (Series B will be sent as published).**

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**Loose leaf binders (canvas bound) to hold charts and log sheets, $1.75.**

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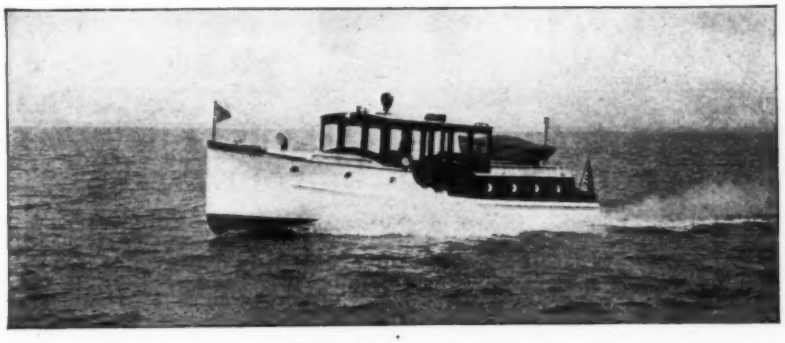
**All Books, 24 charts, log sheets and binder. Ordered together ..... 15.00**

# MoToR BoatinG, 119 West 40th Street, New York


*Advertising Index will be found on page 142*

Scripps

*"The Motor That Crossed the Atlantic"*



# The Rochester Standardized Cruiser

Early in July last we received from you one of your D-6 medium duty marine motors, and immediately installed same in one of our standard 40 foot enclosed bridge Rochester Cruisers. Very shortly after putting this outfit in commission, we turned her over to one of our customers to use for a month while his boat was being finished. The boat was delivered to Port Lewis, 250 miles from Rochester down the St. Lawrence River, used by our customer for one month when we delivered his boat and made the return trip to Rochester, which trip included two weeks vacation by the writer. During the trip down the river and the month in the hands of our customer, the engine worked so beautifully that this gentleman was very loath to part with it even for his own larger boat as he stated that the motor had been so satisfactory that he was afraid that no other motor could equal it.

Now in regard to the writer's vacation experience, he does not hesitate to say that from the standpoint of motor performance the score was perfect. The writer has had many a successful cruise, but none so absolutely satisfactory from the standpoint of power plant performance as this one. The engine is under the bridge deck floor entirely out of sight and almost out of hearing. The only attention the engine required was occasional filling with oil and attention to the two or three grease cups. Aside from this, all manipulation was accomplished by the controls carried to the steering wheel, and in every respect, the performance was just as satisfactory as is customary in the highest grade automobile power plants. During the trip down the St. Lawrence the upper rapids, viz., the Galops, the DuPlat and Farrans Point Rapids were run as is always the writer's habit in making the trip down the river. In making the trip up, I determined to learn whether or not this boat would stem all of this swift water. I was surprised to find that it was not necessary to use the canals either up or down, as no use was made of them above the Long Sault Rapids. The manner in which this little engine drove the good ship "ROCHESTER" up through these rapids was certainly surprising.

It gives the writer great pleasure to say to you that he has never experienced more satisfactory operation and general handling in a marine motor than has been the case with your sweet running D-6 motor.

Signed, VOLNEY E. LACEY, President
Rochester Boat Works.

Among the nationally known builders of standardized craft, none have set a higher standard of quality than the Rochester Boat Works, Inc., Rochester, N. Y. That the SCRIPPS Model D-6 has been selected as the regular power plant for their 40 footer, is particularly gratifying, inasmuch as Mr. Volney E. Lacey, the President of the Rochester Boat Works, is an automotive engineer of mature experience, a man who, in addition to building boats, has also built high quality motors.

Men who know the SCRIPPS best like it most.

A recent letter from Mr. Lacey is reproduced in the panel to the left and contains a fund of good sound advice to the layman who may be undecided in the selection of power equipment.

Scripps prices have always been fair prices, the quality is of the highest and there has never been any inflation. In fact, Scripps values are to-day actually competitive, power, quality, workmanship and equipment considered.

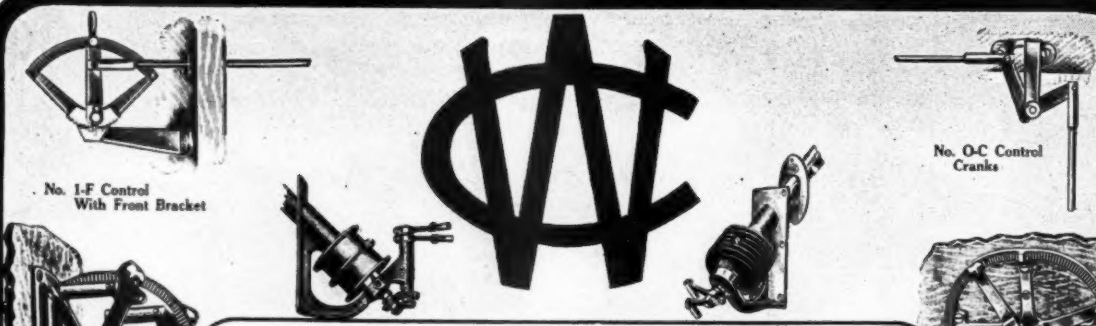
Our range of standardized power plants covers units for boats of every description, including cruising, runabout, speed and commercial types—10 to 125 H. P., 2, 4 and 6-cylinder, gasoline or kerosene.

We also manufacture heavy duty types for operating pumps, compressors, generators and small machine shops.

## SCRIPPS MOTOR COMPANY

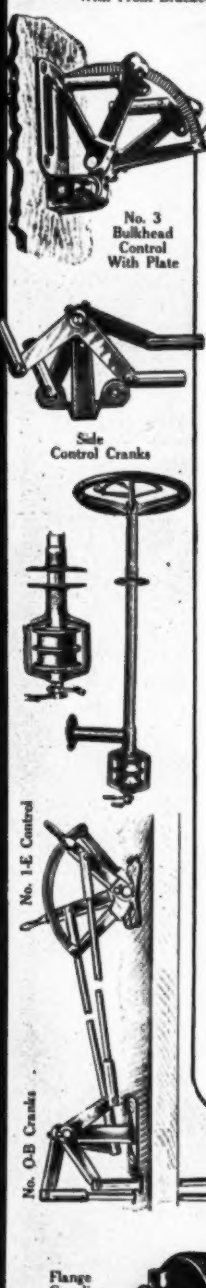
**5819 Lincoln Avenue Detroit, Michigan, U. S. A.**

"Every Moving Part Enclosed"



No. 1-F Control With Front Bracket

No. O-C Control Cranks

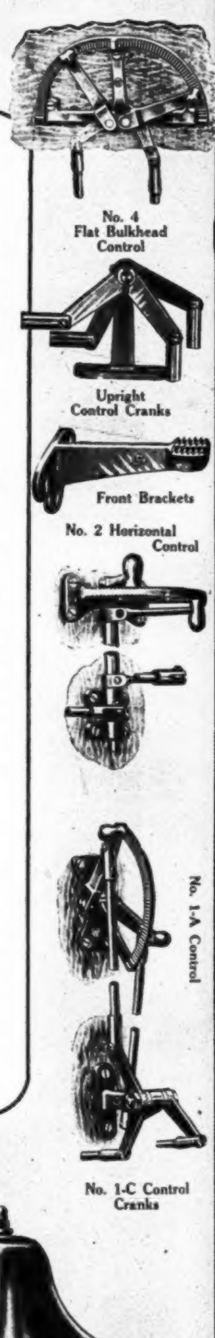


No. 3 Bulkhead Control With Plate

Side Control Cranks

No. 1-E Control

No. O-B Cranks



No. 4 Flat Bulkhead Control

Upright Control Cranks

Front Brackets

No. 2 Horizontal Control

No. 1-A Control

No. 1-C Control Cranks

# Perfect Control of Your Engine from Any Point In Your Boat

THE *WC* line of Spark and Throttle Controls now covers every possible combination necessary for one-man control of the engine. They respond to the slightest change of the levers. Notches guard against accidental shifting. Easy to install. Made of special bronze, highly polished, with single or double levers, in the various designs as shown.

## *WC* SPARK AND THROTTLE CONTROLS
### *One of the 1001 WC Products*

The **Vertical Controls** are of two types. No. 1 (single lever) and No. 1-A (double lever) with solid base are the simplest forms. No. 1-D (single lever) and No. 1-E (double lever) have a toothed arch adjustment at the base which permits the connecting rods to lead in a direction not parallel to the base plates and still allow full swing of the levers. Adjustment is made by loosening a single screw.

There are three types of **Bulkhead Controls.** No. 1-F (single lever) and 1-G (double lever) have the Front Bracket. No. 3 has a hinged adjustment as shown. It also has a plate which covers the slots cut in the bulkhead, giving a finish not possible with 1-F and 1-G. No. 4 sets closely against the bulkhead out of the way. The levers are on opposite sides of the bulkhead, and operate connecting rods in a vertical direction.

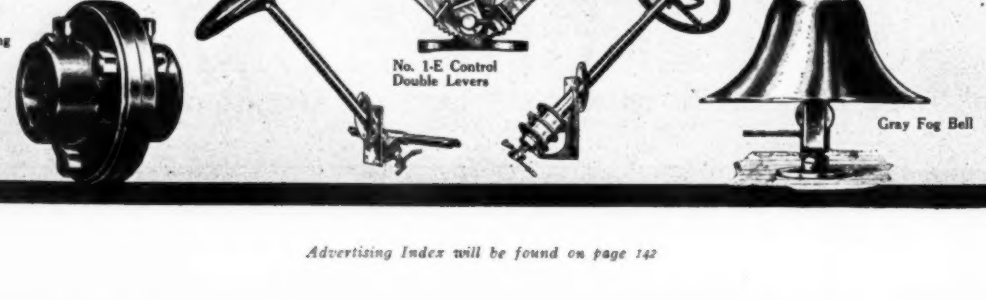
**Horizontal Controls** are particularly desirable for bulkhead control when the motor is placed under the bridge deck. The tube is actuated by the lower lever and the rod inside the tube is actuated by the upper lever. The levers at the bottom of the tube and rod may be clamped in any desired position. Tubing and rod must be cut to length for each installation. Circular on request.

We also make a full line of Auto and Bridge Deck Steerers completely equipped with Spark and Throttle Controls.

### Get This Book of Helpful Hints for Motor Boaters

"Sea Craft Suggestions and Supplies" solves those daily "puzzlers" that few know how to handle. Tells how to Box the Compass; what is Proper Ground Tackle; gives hints on Steering Gear, etc.; describes *WC* Dependable Marine Hardware; tells uses. Compiled from 70 years' experience in making marine fittings. Sent prepaid for 50c.

**WILCOX, CRITTENDEN & CO., Inc.**
4 South Main St., Middletown, Conn.
ESTABLISHED 1847



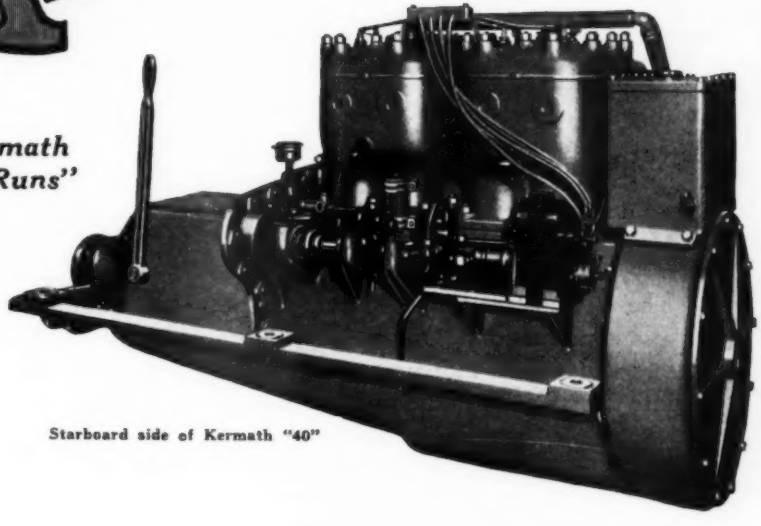
Flange Coupling

No. 1-E Control Double Levers

Gray Fog Bell

# KERMATH

*"A Kermath Always Runs"*



Starboard side of Kermath "40"

## There Is a Kermath To Suit Every Need

FROM the big husky Kermath 40 down to the dependable 4 H. P. the Kermath line is in every way complete. Whether you want a motor for a small pleasure boat or one for a cruiser, you can find a Kermath of exactly the right power to fit it.

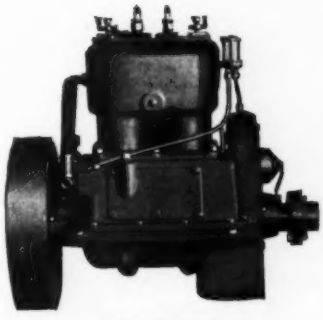
And no matter what their rating of horse power is, Kermath motors all bear the distinction of being "America's Standard Four Cycle Engine." Such merit would never have been established were it not for the honesty in construction of every Kermath.

Kermath motors give Service, the one thing that boat owners want—steady, dependable service that takes the element of chance out of a day's work or pleasure boating.

Talk to the Kermath dealer in your vicinity. You'll find him an expert on marine motors and their relative value.

Write for interesting Kermath Booklet, address Dept. "D."

**Kermath 4 cycle marine motors 4 to 40 H. P.**
**Prices $230 to $1,650. Immediate Delivery.**

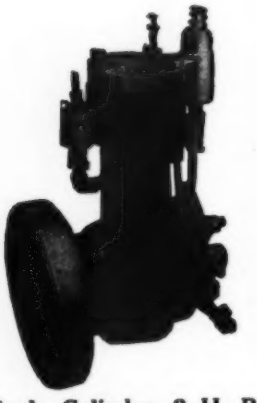


**A NEW KERMATH**
**Built in response to repeated requests by boat owners for a smaller size Kermath. 2 cylinder, 4 cycle, 4-5 H.P. and 6-8 H.P.**

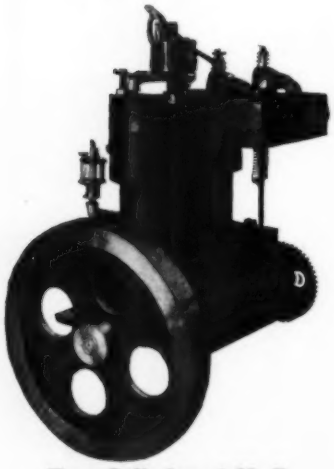
## KERMATH M'f'g Co.
DETROIT MICHIGAN.

# DUNN

# The Lowest Priced
## Four Cycle Motors Made



Single Cylinder, 2 H. P.
Bore 3¾", Stroke 4"
**$42.50**



Two Cylinder, 4 H. P.
Bore 3¾", Stroke 4"
**$75.00**

Two Cylinder, 8 H.P.
Bore 4¼", Stroke 5"
**$125.00**

IF you want a genuine four cycle motor at the lowest possible cost, don't fail to investigate the Dunn Motors. They give you the undoubted advantages of four cycle design at a cost about the same or less than ordinary two cycle motors.

The low cost of Dunn Motors is due to their simplicity of design and construction. Our factory is located out of the high price belt and we put our money into materials and machine work instead of into big salaries and commissions.

Dunn prices speak for themselves. They are just enough to cover essential materials and workmanship. There are just so many necessary working parts in an engine, and anything beyond this means unnecessary expense for the buyer.

Hundreds of Dunn Motors are in use and it is surprising how many testimonial letters we receive from satisfied users. Many a Dunn owner says he would not change engines for others of higher price.

### WHAT A DUNN USER WRITES

"This is to certify that about 10 months ago, I purchased one 12 H.P. Dunn Motor which I had installed in my cabin cruiser, 33½ ft. long by 9 ft. beam, full model boat, and I use this boat in outing trips and have made as high as two hundred miles without a stop. It works beautifully, and my little boy, 13 years old, can and does start motor without any trouble. This motor runs smooth and easy, in fact, is as smooth running as any automobile I have ever used. I consider it the best marine engine made."

(Signed) DR. G. H. HOWARD.

A Dunn Powered Launch

## DUNN MOTOR WORKS, Ogdensburg, N. Y., U. S. A.


*Advertising Index will be found on page 142*

# MOTORS

## Built for Service at the Lowest Possible Cost — Not for Looks

**WHEN you buy a Dunn, you don't get a fancy engine but you get one that's worth the money.**

Did you ever stop to think what makes some engines cost so much more than others? It is finish, extra workmanship, complicated design, and sometimes the tremendous "overhead" expense of a big factory.

In building Dunn Motors we have aimed to supply a satisfactory motor for the man who doesn't care for fancy finish but wants the most power and service for his money. If motor boating is ever to be popular as a sport or profitable as a business, it must have motors and boats at popular prices for the average man, as well as the expensive outfits for the wealthy buyer.

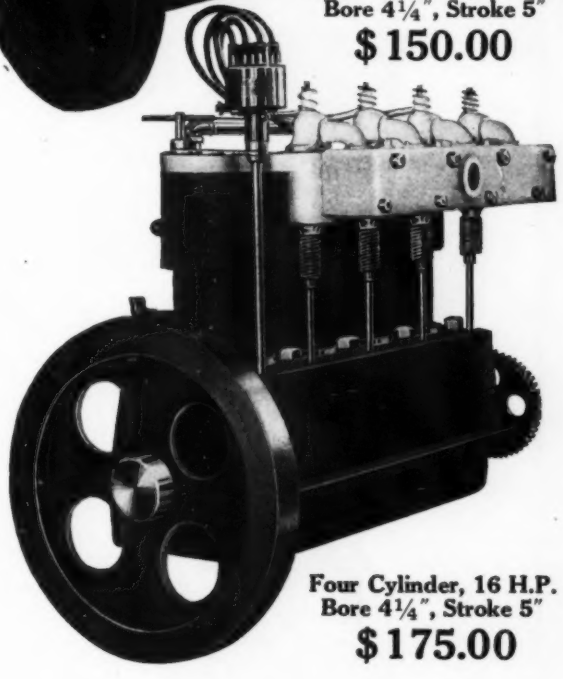
Some men can't change a spark plug without breaking something while some others can make any motor run like a watch. We believe the average man who buys a Dunn Motor gets more real enjoyment out of boating than the man whose only tool is a check book.

The prices quoted include complete equipment, propeller, shaft, couplings, coil, spark plugs, mixing valves and oil cups. Foreign buyers should add 10% to cover cost of boxing for export and delivery F. O. B. steamer at New York City.

*Write today for catalog*

**Three Cylinder, 6 H.P.**
**Bore 3¾", Stroke 4"**
**$100.00**

**Three Cylinder, 12 H.P.**
**Bore 4¼", Stroke 5"**
**$150.00**

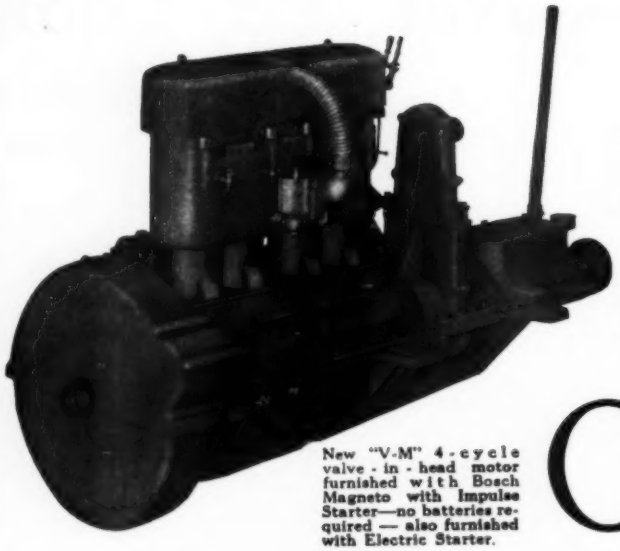


**Four Cylinder, 16 H.P.**
**Bore 4¼", Stroke 5"**
**$175.00**

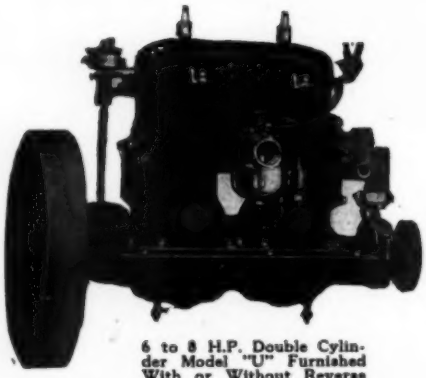
## DUNN MOTOR WORKS, Ogdensburg, N. Y., U. S. A.

# Gray Marine Motors for 1921

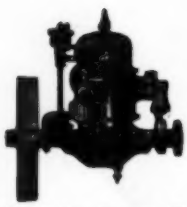
## "the engine with the big crank shaft"



New "V-M" 4-cycle valve-in-head motor furnished with Bosch Magneto with Impulse Starter—no batteries required — also furnished with Electric Starter.



6 to 8 H.P. Double Cylinder Model "U" Furnished With or Without Reverse Gear



Selected for Canoes, Row Boats and Small Launches. 3-8 H.P. 2-cycle Gray Motor. Standard the World Over.

### This new model V-M 4 cycle engine marks an epoch in Marine Motor History

OVERHEAD valve marine-motors are acknowledged to be of greater efficiency and power than other types and in the Gray the ultimate or valve-in-head marine motor perfection has been attained.

The Gray is designed to operate on either gasoline or kerosene, it cannot backfire, it burns the fuel keenly with practically no carbon, soot, smoke or odor and lubrication troubles are unheard of in the Gray.

Our Hot-Spot Cylinder Head gasifies thoroughly the fuel used and renders it completely combustible.

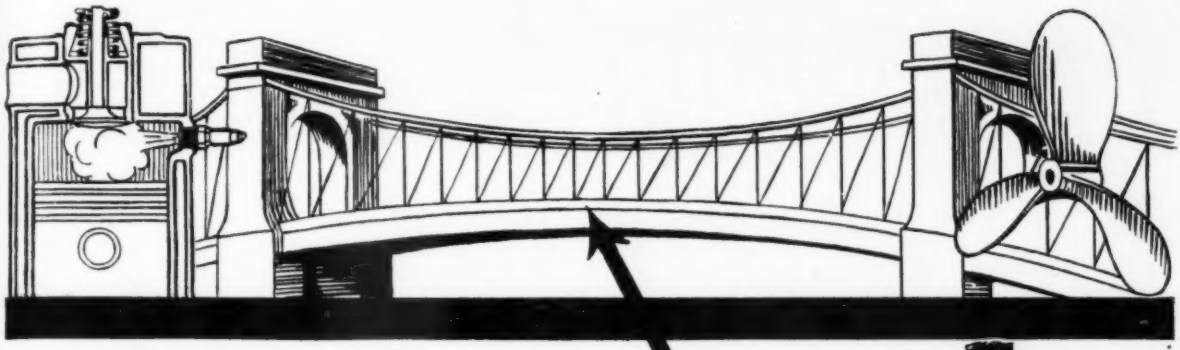
Gray Two-Cycle Motors are built in models from 3 to 8 h. p. Gray Four-Cycle Motors are built in three sizes, 10 to 50 h. p. Write for FREE catalog.

**You can place your order now for shipment next spring or sooner, and should the price of labor or material be reduced, we will give you the benefit of the same.**

**By having your order on our books now, will guarantee delivery when you require your engine, and at the same time you are protected in price.**

**GRAY MOTOR COMPANY** 2106 MACK AVE., **Detroit, Mich.**

*Advertising Index will be found on page 142*



# A Strong Bridge From Power To Propeller

JOES Reverse Gear is like a strong bridge spanning the gap between the power of your engine and the blades of your propeller—strong enough to carry the heaviest load your engine can put upon it.

Back and forth, forward and reverse, a thousand times a day, smoothly and efficiently, with absolute reliability Joes Gear carries the power to make your boat obey your will.

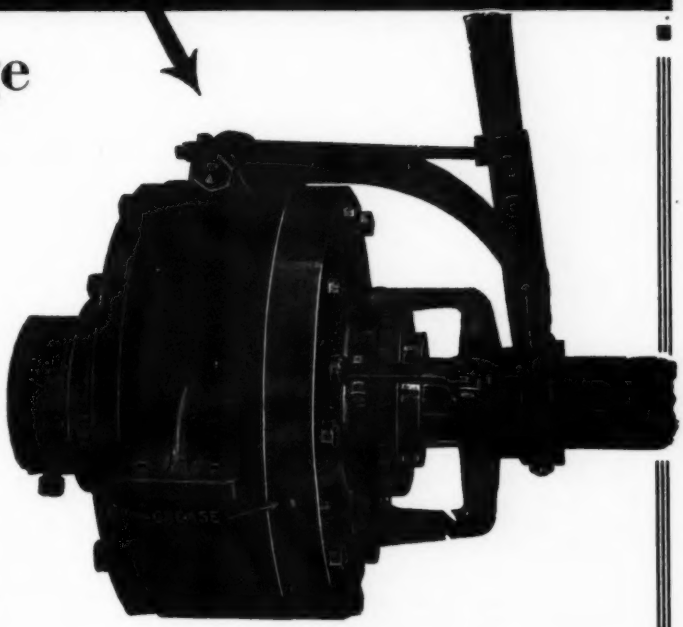
Though built primarily for heavy duty work boat service, Joes Reverse Gear quickly won high favor for racing and speed boat service also, because of its unusual strength and dependability.

Joes Reverse Gears are now supplied for every need and speed.

**Write for Catalog**

Contains full information about Joes Duplex Drive and High Power Gears, One-Way Clutches and Safety Rear Starters. Also ask for Special Folder on

Joes Husky for big Diesel and Semi-Diesel engines.



# JOES REVERSE GEAR

***80%-88% Reverse Speed Ratio***

**The Snow & Petrelli Mfg. Co., 156-B, Brewery St., New Haven, Conn.**

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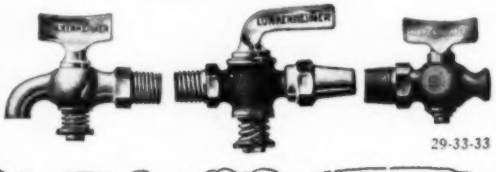
Southern Calif.—Fellows & Stewart, Inc., Wilmington.
San Francisco—A. G. Hebgen, 440 Market St.
Toronto, Canada—A. R. Williams Machinery Co.
Montreal, Canada—The Pyke Motor & Yacht Co.
Newfoundland—John Barron & Co., 241 Water St., St. Johns.
England—J. King & Co., 10 Church Row, Limehouse, E. London.
Norway—Arendahl Motor & Machine Co., Arendahl.
Turkey—Société Générale d'Automobiles, Constantinople.

LUNKENHEIMER
Automotive
Accessories



**For use on all types of Internal Combustion Engines**

**Recognized by Builder and User as the true standard of excellence in the marine field.**

Their unfailing reliability, characteristic of Lunkenheimer Products, is a contributing factor to the successful operation of Motor Craft everywhere.

Lunkenheimer Automotive Accessories perform the functions for which they are intended with a certainty that insures safe and economical operation, and the high quality materials used coupled with the Lunkenheimer method of manufacture means permanence and low maintenance cost.

In addition to the Accessories shown here a multitude of others are illustrated in our Catalog No. 5-CC—Write for a copy.

Distributors of Lunkenheimer Products situated in every commercial centre.

THE LUNKENHEIMER CO.
"QUALITY"
Largest Manufacturers of High Grade Engineering Specialties i nthe World
CINCINNATI
New York Chicago London Boston

29-33-33


## *That Genial Chesapeake*

(*Continued from page 39*)

boat cruiser make up the most discouraging piece of water between Cape Cod and Cape Henry. This particular day in late July, although the swift river tide was with us all the way, a merciless head wind had whipped up a choppy, angry sea against which our thirty feet of pine and oak battled bravely and stubbornly.

Engine trouble,—a dead stop. A rolling and clattering and banging while I stood helplessly at the wheel wondering whether the captain would get her started again before we drifted onto that ominous white bit of water we seemed to be heading for. Why hadn't I kept out in deep water where he told me to? Half an hour of anguish, a crash from below—the jam and eggs gone. Why hadn't I latched the locker door? Fine crew I was. Should I call the captain and show him how near we were to those shoals or take a chance? Take a chance—was the anchor ready? br-r-r—s's't—the engine! Here we go!

Then acres of oyster stakes numberless, trackless, desolate, bending drearily down with the wind. The channel buoys at last!

"Go close and read the numbers," orders the captain. 8, 10, 12; we must be near Bombay Hook. Huge hulks of barges pass us, carried on by powerful tugs; the grey, towering, familiar shape of a Hog Island cargo steamer turns slowly in midstream, making her trial trip.

As the river narrows our spirits rise. Maybe we will get somewhere today after all. We pass Bombay Hook, and the round clock face of the tide indicator dwindles and disappears. The captain, who has vanished below, reappears in a clean white shirt. "For the locks," he explains. I follow his example, and when I put my newly washed face out of the companionway, I see Fort Delaware on our starboard bow, and, as we turn, ahead of us, soft in the afternoon shadows, are the lock gates, the little conical light towers, the sheltering roofs and trees—a breath from the land—the welcome of Delaware City.

It was half an hour later that I found myself, ice cream in hand, walking up the street to join the captain, whom I spied standing with his hands in his pockets, gazing in at a shop window.

"Come on," I urged; "This ice cream's going to melt. "What are you looking at anyway?"

I stepped nearer. The window displayed a miscellaneous assortment of hardware: Tools, bicycle tires, chains. A sign, painfully traced in ink, read:

BICYCLES
AIR PUMPS
WEDIN' RINGS

On the wall a colored poster portrayed a prosperous looking pig, large and sleek, with a curly flourish to his tail. By his side was depicted a quart bottle, and underneath ran the legend:

HOG TONE!
PUTS KINKS IN THEIR TAILS!
ONE DOLLAR THE BOTTLE

Silently, but for a joyful chuckle, we pursued our way. Main Street, in Delaware City, runs along the edge of the canal, so all we had to do to reach home was to cross the street and step aboard. When we came ashore later to buy provisions for the next day's run it was dusk; lights twinkled on the clustered spars of the schooners and skip-jacks lying close together in the basin.

"We'd better hurry up and get back before the mosquitoes start," said the crew, who had spent twenty-two summers on the Jersey Coast. The captain smiled wisely, but said nothing.

The grocery stores of Delaware City consisting for the most part of one room, the proprietor is forced to display a considerable section of his wares on the pavement. We treaded our way through baskets of peaches, warm red tomatoes, cucumbers,—watermelons to be had for ten cents a piece. The crew became excited. Housewifely instincts, long subdued under a New England cruising diet of fish, beans, onions—canned foods—revived. We stopped in front of a brightly lighted shop to discuss how many of those peaches we could eat in two days. Deciding upon a two quart basket we turned to the row of citizens who sat with their chairs tilted against the wall of the house, pipes in hand, sympathetic spectators,—and inquired for the proprietor. Over the heads of these gentlemen was a lamp, and around the light buzzed a cloud of dread and familiar insects. I looked at this horrid sight, and at the unprotected scalps below. Then I noticed the shop door had no screen. My face must have reflected my feeling, for the shirt-sleeve gathering smiled, and one of them volunteered,

"Those ain't mosquitoes Miss; They's Woolly Heads! Woolly Heads don't bite."

One of the insects lit on my hand, and upon examination, it proved to be exactly like my Jersey acquaintances, except that its head was a woolly fuzz, and that it had no sting! The captain, delighted, repeated that the Chesapeake held plenty of surprises. I could see that he counted Delaware City as the

(*Continued on page 108*)

# Marvelous New Ignition Current for Motor Boats

HERE'S Columbia "Multiple" Dry Battery No. 356, with 4 times the life of an ordinary battery, and so absolutely waterproof it will work under water—

A spark that snaps—zips up an engine—makes lazy gas work. Perfect ignition for the first time in the history of motor boating!

***A Single Dry Battery of 15 Cellpower —Absolutely Waterproof—Only 2 Binding Posts, and They're Perfectly Insulated***

Not a thing to keep in running order—not a spot to protect from rust—not a connector to work loose and break the circuit.

Ask your dealer today for a Columbia "Multiple" No. 356 for your ignition—and you'll order another soon for your lights.

**NATIONAL CARBON COMPANY**
*Incorporated*
**Cleveland, Ohio San Francisco, Calif.**
***Canadian National Carbon Co., Limited, Toronto, Canada***

# Columbia Dry and Storage Batteries

*Designed and made by J. E. Caldwell & Co., Philadelphia*

PRIZE CUPS

PHOTOGRAPHS of Cups in stock or designs and estimates for cups to suit prescribed requirements, forwarded upon request.

Table Services for Yachts

J. E. CALDWELL & COMPANY

JEWELERS—SILVERSMITHS—STATIONERS

PHILADELPHIA

## *Shrimp, a 25-foot Hampton Boat*

(*Continued from page 37*)

In sides of trunk 4½ x 10 inch oval dead lights to be fitted. Forward bulkhead to be ⅞ inch tongued, grooved, and V-d cypress or mahogany.

Cockpit Seats. Framing to be 1 x 1¾ inch oak; tops ¼ inches, staving ⅜ inch tongued, grooved, and V-d, finish pieces top and bottom to be ⅜ x 3 inches. Cushions to be 2½ inch thick kapoc filled, khaki covered, made with brass grommets and in best manner. To be in convenient sections for access to lockers as indicated. Under forward end of side forward seats ⅝ inch board to be fitted as shown and space left open.

Bitts. On forward deck extending down to keel oak 4 x 4 inch bitt to be secured into stem and through 10 x 1 inch oak partner fastened under beams and through filling of oak between beams. Galvanized pin ⅜ inch dia. to be driven tightly near head.

On aft deck two galvanized No. 9 bitts to be riveted through oak filling between beams.

Steering Gear. Steering wheel to be 16 inch side steerer with drum. Tiller rope to be ⅛ inch galvanized wire tiller rope through 3¼ inch galvanized sheaves as indicated. Rope to have ⅜ inch turnbuckle fitted. All sheaves and steerer to be fastened with screws. Rope rove so that bow turns to starboard when wheel at upper spoke is pushed forward.

Gasoline Tanks. Two 12 x 18 inch seamless steel fuel tanks complete with vent, filling pipe threaded into filling deck plate in seat top and into bushing on tank, with outlet, and strapped and chocked in position to be installed as shown. To be given coat of red lead paint.

*Equipment:*

One 25 pound stockless anchor.
150 feet of 2 inch cir. Manila rope.
Two 25 foot lines of 1 inch cir. Manila rope.
One 6 foot boat hook.
One 3 inch liquid compass.
Set of running and anchor lights, oil, galvanized.
Fire extinguisher.
Fog horn.
Rowlock sockets and pair of 8 foot oars.
Bow and stern flag pole sockets.
Bow chocks, 4 inch galvanized.
Stern chocks, 4 inch galvanized.
Bow and stern flag poles.
American yacht ensign.
Six life preservers.
Fog bell.
Portable bilge pump.
Two galvanized pipe berths with canvas bottoms, made to fit space.
Spray hood of owner's selection.
Two cushions same as cockpit cushions to fit transoms.
One 2½ inch galvanized ventilator.

*Painting and Finish*

Entire interior and exterior of hull to receive coat of priming paint except work which is to finish natural.

All natural finish to receive one coat of filler and at least three coats of spar varnish.

Exterior of hull above the painted water line to be given at least three coats of yacht white, except sheer ribband which is to be finished natural.

Exterior below painted water line to receive two coats of anti-fouling copper paint. Rudder painted same as hull.

Sides and aft end of trunk to be painted. Top of trunk to be painted three coats of salmon deck paint.

Planksheer, quarter-rounds, coaming, bulkhead at forward end of trunk, seat fronts, ⅞ inch bulkhead at forward end of cockpit, and decks to be given natural finish.

Interior of hull, tops of seats, interior of lockers, cockpit floor, etc., to be given two coats of gray paint.

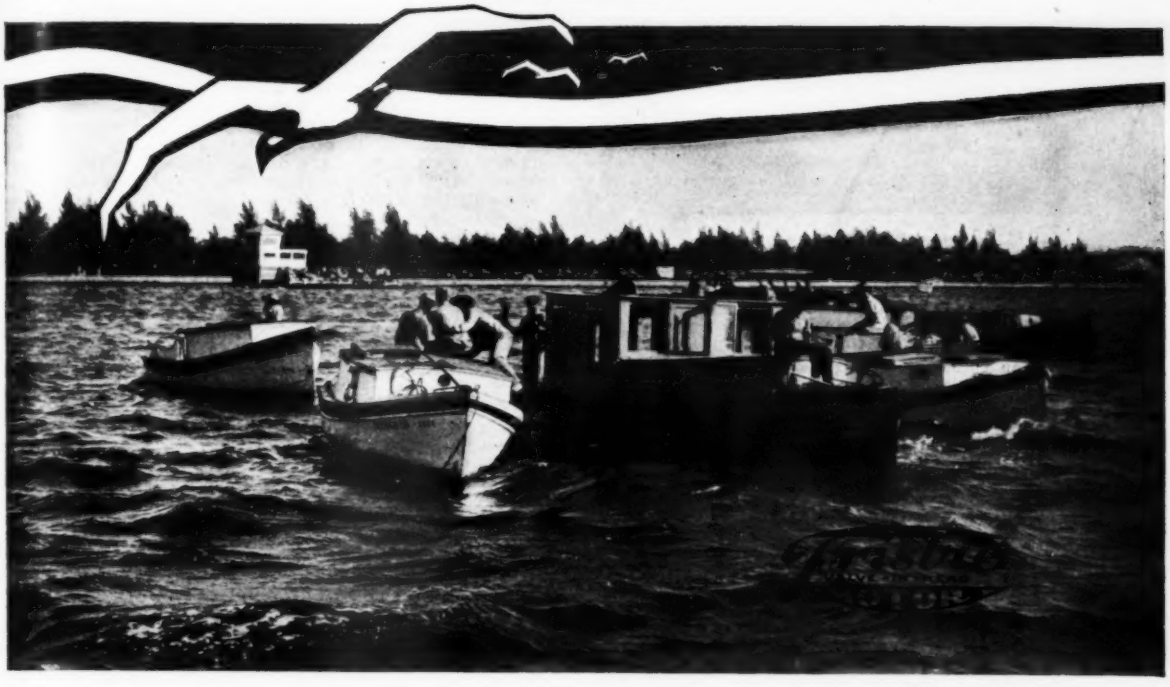
---

## *Speejacks*

One of the most interesting cruisers to be delivered this season, will be A. Y. Gowen's new Speejacks, a 98 foot sea going motor cruiser. The designers and builders of this boat are the Consolidated Shipbuilding Corporation, Morris Heights, New York City, where the boat is now being rushed to completion.

Mr. Gowen contemplates, in fact, final plans have been made for, a 38,000 mile trip around the world. Speejacks will proceed from New York to Colon, passing through the Panama Canal. From the West Coast it will be towed to Yokohoma, Japan. Under its own power Speejacks will cruise to Liverpool, and be towed from there back to New York.

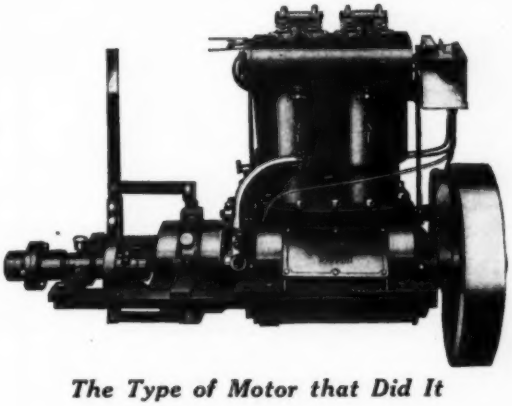
*Advertising Index will be found on page 142*



# Frisbie Just In From Long Fishing Trip Wins Stiff Four Mile Race at Miami

COMPETITION in the Florida Fishing Boat Championship, Unlimited Power, was so sharp that some of the entrants even installed new motors the night before the race. Yet despite the fact that the "Virginia," powered by a 2-cylinder, 16 H.P. Frisbie Valve-in-Head Motor, was just in from a long fishing trip, and had barely time to get her second wind before starting, she won by an eighth of a mile.

Any boatman who wants a medium duty boat for commercial work or pleasure possessing the long-run endurance and reliability of the "friendly" Frisbie is invited to write for catalog and name of nearest dealer.



*The Type of Motor that Did It*

**FRISBIE MOTOR COMPANY**
**7 COLLEGE STREET**
**MIDDLETOWN, CONN.**

Sturtevant
(REG. U.S. PAT. OFF.)
75 H. P. LIGHT WEIGHT ENGINE
AN UNUSUAL ENGINE
FOR UNUSUAL BOATS
If an engine of the highest quality—one which is efficient, reliable, and clean-cut in appearance—interests you, investigate the Sturtevant E4.
Built on special order during the past six years.
Now standardized and ready for general distribution. Catalog No. 26826
PARR-LOICHOT ENGINE CORP., Agents
380 Canal Street New York City
B. F. STURTEVANT COMPANY
HYDE PARK, BOSTON, MASSACHUSETTS

POINTS TRUE!
As your compass guides you safely to port, so the mark WC guides you to Dependable Motor Boat Fittings. The
WC Oil Compass
is constructed on scientific principles by skillful workmen. Its action, accuracy and steadiness are guaranteed under all conditions. Built to withstand the jars of power craft, the dial is adjusted to remain steady in a sea way and responds quickly to a change in direction. Every compass carefully tested before shipping. 2, 2½, 3, 4 and 5 inch dials. At your dealer's or write us.
Send 20c in stamps for Celluloid Course Protractor. "Compass Talks and Tests" sent free. Tells how to box the compass, contains deviation tables, and other practical information for compass users.
Wilcox, Crittenden & Co., Inc.
Established 1874
4 South Main St. Middletown, Conn.

## *That Genial Chesapeake*

(*Continued from page* 104)

threshold of the Chesapeake. Indeed, there was a genial slowness about its inhabitants, a disposition and readiness to stop at any moment and exchange work for conversation that was very different from the brisk heartiness of the northerners. The atmosphere bred talkers, not doers. Nobody drove a hard bargain. When we had completed our purchases the proprietor bent across the counter.

"Have a cigar?" said he to the captain.

We remembered stories of pioneer days, when it was the custom of the farmers who rode into town to stay and visit with, which meant have a few drinks with, the village store keeper. We recognized in the cigar offering that these proprieties are still observed though in a different form.

Near us at Jim Henry's was a small and very shabby Bug-eye, hailing from the Elk River and bound for Wilmington with a load of watermelons. The owner, who looked as battered as his boat, and equally picturesque, wanted to give us a piece of his cargo to sample, hinting that "these Delaware melons warn't no good—wait till yu git to the Bay."

Next morning we had luscious yellow peaches for breakfast, and when it was time to have peaches for lunch we were at Saint George's Lock, waiting for some bigger, more important craft to come along and blow for the lock keeper. We waited two hours, sitting on the grassy, shady lawn sloping down from the whitewashed walls of the lock. The keepers, loafing under the trees, told us that sence the guv'ment tuk over the canal they warn't allowed fer to open for small pleasure boats. Tuk too much coal openin' up all the while. Ya'as, the guv'ment shore was economical. We looked at the neat, whitewashed house of the lock keeper, at the gay flowerbeds along the water, the grass and the trees; we noted with envy the settled ease of the lock keeper's pose as he sat on his bench smoking his pipe. We glanced furtively at each other. Why be a professor? Why not be a lock tender? A glorious existence.

Evening found us slipping under the last white bridge. The trees which had lined the banks so thickly gave way to wider spaces—we emerged suddenly onto a tiny lake; a hundred yards ahead was another lock, and below to the left the spars of many boats. We were at Chesapeake City.

Chesapeake City! Delaware City! Superb names, suggestive of the thronged streets, the busy traffic of a great commercial town. There is something in those names which is a tonic to the inlander, used to living in a burg or a ville or a town; only those who go down to the sea in ships have imagination enough to christen a settlement as a city, and then to keep the name even when the citizens know of a hundred years experience that there is no hope of living up to it.

As we shut off our engine and glided to the bank I wondered that we could have had the temerity to make such an uproar in that quiet place. We gently bumped the bank, and I jumped ashore with the painter. An old man with a long beard stood up and, patiently winding up his fishing line, moved ten yards off and sat down again. The lock keeper approached.

"Can I tie up here to this willow tree?" I asked timidly, half expecting a rebuff.

"Sure yu can Miss,"—looking me over in evident wonderment that I should doubt his hospitality, "You don't have to ask that. Why this ain't Delaware; *this yeah is Maryland!*"

We lingered under the shade of that willow tree for a week. I fell under the spell of the Chesapeake. The world seemed a million miles away. Nothing disturbed the calm of our existence. A few barges, gay with the yellow and red paint of their company, laden with cord-wood from the Carolinas, came through the lock in the mornings and early evenings. At eleven each night the passenger steamer went through; the night boat, the bystanders called it. There were lights, and shouting; the churning of water and creeking of ropes; but when it had gone the silence and the stars, the quiet ripples on the water, belied the fact that it had ever been there.

In the daytime we worked on our craft. Gettin' shined up for Annapolis, the lock keepers called our work. The job of painting the awning over the cockpit fell to the crew. As I balanced on the awning stanchions, stretched on my stomach on a board the lock keeper had obligingly placed at my disposal, one of our friends, a shabby, jovial gentleman whose business it was to cut the grass around the lock, pushed his mower up and down on the bank and conversed with me. I could answer his sallies only with grunts and a waving of the paint brush, for fear of dislodging my board and putting a knee through the awning.

"Awful hard work, this yeah," he remarked. "Sence the guv'ment's tuk over the canal I have all this grass,"—with a comprehensive sweep of his arm, as if he had to mow all the State of Maryland instead of some half acre of grass around the basin,—"all this yeah grass to cut."

"Is that all you have to do?" I ventured. Whenever I had seen the gentleman before, he had been sitting in the shade of the lock keeper's shed, whittling on a stick.

(*Continued on page* 118)

*Advertising Index will be found on page 142*

## Twenty-Eight Years of Accumulative Wisdom Explains Doman Marine Engine Superiority

No matter for what use a boat engine is purchased, whether it be commercial or pleasure seeking purposes, it is *poor economy* to buy an unknown or cheap motor.

The name and character of the factory organization back of the motor is what should influence the sale of it.

The right kind of a factory organization cannot but help produce a commodity of exceptional merit.

For twenty-seven years Doman Marine Engines have been built in the same plant—with its additions.

And in that same time, knowledge that comes only with experience and the wisdom that lingers, has accumulated in the Doman factory organization.

Through pride in the product they are helping to produce, Doman workmen remain year after year. Their quality work is what enables each Doman owner to realize years of "built-in" service from his purchase.

With the ownership of a Doman powered boat comes that satisfied feeling of contentment, for you know that Doman dependability will drive your boat whenever and wherever you want to go.

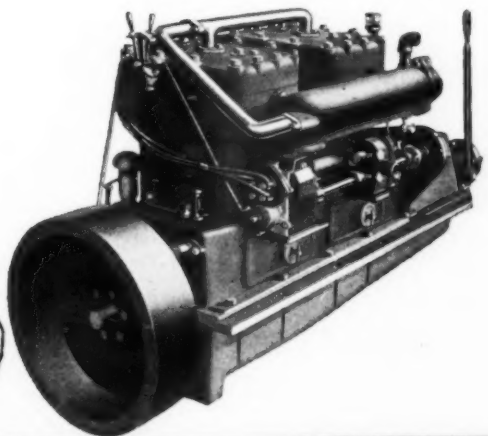
***No matter if you now own a boat or not write us for specifications and our other valuable marine engine data. You will note that Doman engines have a number of unusual features.***

DOMAN ENGINE DIVISION

**UNIVERSAL PRODUCTS CO.**

**OSHKOSH, WISCONSIN**

***Also Builders of the Universal Products Isolated Lighting Plants***



**Doman Exclusive Features**

*Oversized waterjackets. Extra large bronze-backed bearings. Giant valves. Leak proof oiling system. Kerosene burning equipment optional.*

*Doman Marine Engines built in sizes from 4 to 50 H. P.*

## *On the Cruise of the Hippocampus*

Every once in a while when you're at sea a bigger wave than the usual run sneaks up from somewhere and drops down on you with the noise and general effect of a misplaced Niagara—and you duck your head and try to remember what happened. That's about the way I felt a couple of weeks ago when I read in the March issue of MoToR BoatinG that I was scheduled to cruise in a yawl from New York to San Francisco.

As a matter of fact I had mentioned the cruise to the Editor and had asked him to take a series of articles; but at the moment of going to press with the March issue various not altogether unexpected things had occurred, and I was lying low hoping that Mr. Chapman would forget me until the magazine was printed. The first of these occurrences concerned the original crew of three men who had unanimously decided to voyage overland or not at all to the Pacific Coast. That left me without any companions for the cruise. The second concerned the boat. I had just learned that the one we had had in mind was about as sound as a sieve and could be expected to open all her seams before we had passed outside of Ambrose Channel. Moreover, there wasn't another boat on the market that seemed satisfactory on any point from seaworthiness to purchase price.

So when I saw it advertised that I was to take the cruise I was the most surprised of MoToR BoatinG's readers, and I felt distinctly low. A tidal wave couldn't have flattened me any more effectively than that announcement did.

However, since that time a few more things have happened. One-third of a new and reduced crew has been definitely signed up, and I, constituting another third, am confidently looking for the remainder. And the ideal boat has been found and is in the process of going into commission.

She is the 28-foot auxiliary yawl *Hippocampus*, built in 1916 for E. J. G. Yalden after Fred Goeller's designs and compounded of stout timbers and honesty in equal proportions. Under the ownership of William Caesar for the last four years she has been carefully handled and maintained, and at the moment of writing she needs only a few passes with a paint brush to make her fit for a cruise around the world. Her motor is an 8-10 h.p. two-cylinder Palmer turning a Thompson feathering propeller, and I am told that in the five years since it left the shop the power plant has been used just enough to run it in and limber it up.

Starting from New York the first station-stop (as the careful employees of the railways have fallen into the habit of saying) will be Norfolk, Va. There may be other stops en route, but that's the first scheduled port for a hot meal and a change into dry clothes. After that we may hit Charleston and from there Jax, and so on (with a side run to Bimini) down to Key West, from whence we shove off into foreign lands unknown. According to wind, weather, and the inclination of the moment we'll head from Havana to Colon via the West Indies or the Central before the hurricane season hits the Carribbean.

An apology is in order in concluding. Although I plan to be navigator and engineer of the good ship *Hippocampus* (which may suffer a change of name to something that rolls a little better off the Spanish tongue. I can't hope to be her sailing master. All my previous experience on the water has been with power, and I could write several issues of MoToR BoatinG under the general heading of What I Don't Know About Sailing a Yawl. Consequently I may be expected to do a number of things and use a number of expressions which are not sanctioned in the wind-jamming school of yachtsmen. But I'll be right on one point. If ever you see the sentence, "The crew thereupon spliced the main brace," you may know that I mean exactly that, and may be sure that the cruise has at least progressed beyond the three-mile limit.

## *Knox Motors Show Up Better Than Claims*

(*Continued from page* 40)

We tried every test we know of. First we ran the motor with no load on. With the throttle closed, she just chugged along at about a couple of hundred r.p.m., without the slightest hesitancy or tendency to miss or run at an uneven gallop. The absence of noise from the timing gears and overhead valve mechanism was especially noticeable as we opened up the throttle and the motor speeded up. Even with the throttle well open and no load there was no excessive vibration or racing noises often present in some marine motors. We can't imagine a smoother running outfit than we found in that 20 h.p. Knox.

Next we tried a brake test for horsepower. The curve on page 40 shows the result. It isn't necessary to go into details. We started at 600 r.p.m. and went up by about 50 r.p.m. steps. The increase in power was uniform, as the curve shows. At 1,000 r.p.m. the motor was pulling a little better than 22 horsepower. At 1,200 there was no falling off in power. The torque curve also is interesting, it remaining practically a straight line of uniform torque up to 1,200 r.p.m.

The next test was one to determine the fuel consumption. We set the throttle at 900 r.p.m. and the dynamometer at a point so that the motor would be pulling 20.75 horsepower at this speed. It required just 14 minutes and 35 seconds to consume 5 pounds of gasoline. This is equivalent to 3.37 gallons per hour or .99 pounds of fuel per horsepower hour. The intake water temperature was 67°F. and the discharge 80°F.

Present also at the test besides the editor of MoToR BoatinG were C. J. Robertson of the Paragon Gear Works and J. E. Murphy of *Motor Boat*.

## *Nineteen Twenty-One—The World's Greatest Racing Season*

(*Continued from page* 44)

450 H. P. which competed in the Miami races, is also assured for the Buffalo meet. This speedy craft is owned by George J. Leary Jr., son of a wealthy contractor and sportsman of New York City and Palm Beach. Mr. Leary, Sr. became so enthused during the races in Florida that he is planning on a fast runabout which he says will not only beat his son's boat but also take the Fisher Trophy back to New York where it could be properly displayed at Tiffanys.

A number of prominent Buffalo sportsmen are also planning entries for this race, and do not propose that their out of town guests shall get away with the Trophy without a strugle. Among those mentioned are Commodore Humphrey Birge, Commodore Harry T. Vars, and Commodore Ralph Sidway. At the present time it appears that there will be at least a dozen starters for this gruealling contest, all runabouts capable of better than 40 miles an hour.

In addition to the Fisher Trophy race, which will be the feature event, the Launch Club officials are planning two other races, to be run in three heats each, thus giving three separate heats of three different classes for each of the three days of the regatta.

The Hydroplane class will be limited to single-engined boats of the Miss Toronto and Mistiyc type. Commodore Harry B. Parsons, of the Cleveland Yacht Club, stated at Miami that there will be a Miss Cleveland of this class to contend with this year. As there will be races for this class at Thousand Islands, Toronto, Put In Bay and Buffalo, it is to be hoped that local enthusiasts will either put a syndicate boat or else several privately owned flyers in this race to demonstrate to the national fraternity that we not only have the best course in the country, and can run races better, but that we can also produce and drive winners.

The third class will be a free-for-all for runabouts powered with other than stock marine engines. The majority of these boats will be powered with converted Liberty airplane motors, and while capable of carrying five to ten passengers, will probably show a maximum speed of close to 55 miles an hour.

## *Chicago Races in August*

After an interval of nine years power boat racing is coming back to Chicago. Sheldon Clark, commodore of the Chicago Yacht Club, has been named chairman of a committee by Mayor Thompson, and is already at work on the plans for the speed events, which will be held in connection with the Pageant of Progress Exposition at Chicago, July 30th to August 14th.

Commodore Clark has been assured that the fastest boats in America will be sent here for the races, and one, Miss Toronto, has been formally entered by her owner, F. G. Ericson, of Toronto, Ont.

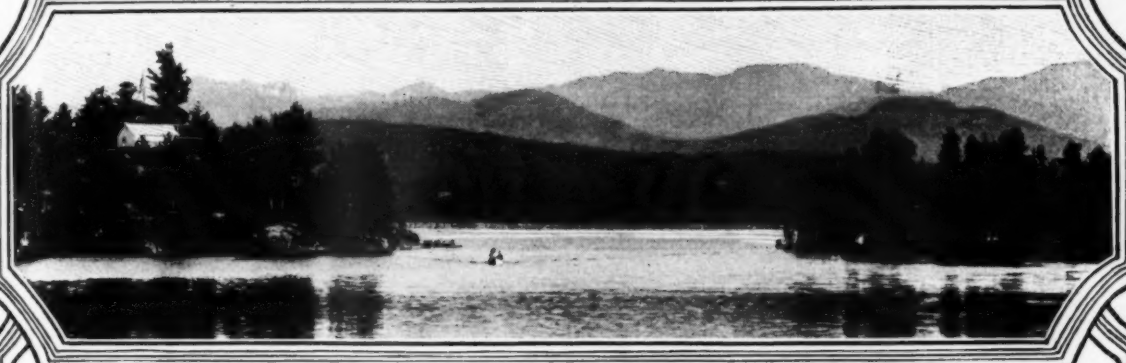
Prizes commensurate with the class of the events will be offered. Mr. Clark said yesterday he hoped to be able to offer at least one $10,000 prize, for the big race, and other cups and trophies from $5,000 down.

"We plan to lay out a three-mile course inside the Municipal Pier breakwater, with a 250-foot clearance from the breakwater all the way round, and in protected water all the way. The spectators will be able to see the boats all through the race.

"I am trying to form a syndicate now to build at least two boats to compete in the name of Chicago. We can call one 'Mister Chicago,' or 'Father Dearborn,' and the other 'Miss Chicago,' or whatever name is decided upon. The hull of the old Disturber IV is as good as ever. Somebody could take that boat and put about four Liberty motors in her and she would give any of them a race.

"Detroit, Cleveland, Buffalo and Toronto are all building syndicate boats now, financed by public-spirited citizens. They realize the advertising advantages in the race meets. At Detroit this year there will be the races for the Harmsworth Cup, the international trophy, which was won last year at Cowes by Miss America, of Detroit, the Gold Cup, and the Fisher Trophy for displacement boats.

"The Mississippi Valley Power Boat Association will hold its meet for the Webb Trophy at Peoria, Ill. Both associations have agreed to change their dates so they won't conflict with the meet during Chicago's Pageant of Progress Exposition. That was very sportsmanlike of them, and they will send their boats here to race, too. We are assured of enough entries for three days' racing, and we may be able to stretch it to a week, with something doing every minute.



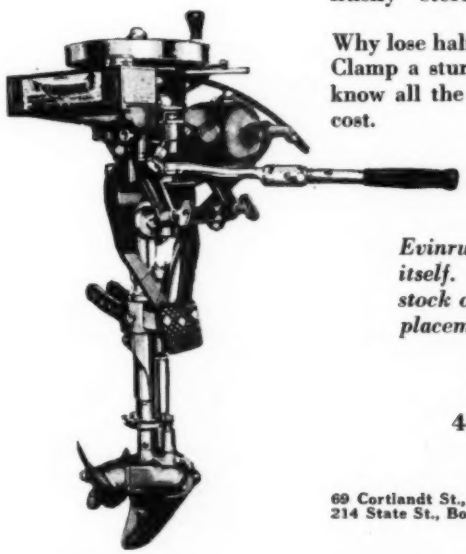
*Beautiful Saranac Lake, N. Y., in the Adirondack Mountains, where more than 50 Evinrudes are in use*

# No More Rowing!

**BREEZING over the water without oar-work—speeding away to distant anchorage, off for a visit to neighboring yacht club, or merely loafing along for a cool ride—that's Evinruding! The favorite sport of more than 120,000 vacationists and outdoor-lovers.**

**An Evinrude is just the power-plant for dinghy or tender. Regardless of wind or weather, you can depend on this husky "stern kicker" to get you there and back.**

**Why lose half the fun of this year's outings sweating at the oars? Clamp a sturdy little Evinrude to your row boat or canoe and know all the joys of motorboating at a surprisingly reasonable cost.**



**2 Horse Power Automatic Reverse Built-in-Flywheel Magneto**

**See the Evinrude at your hardware or sporting goods dealer's and ask him why it costs only $10 a year. Or send for illustrated catalog.**

***Evinrude service is as convenient as the motor itself. All the Service Stations listed below carry a stock of parts—you need never wait long for a replacement.***

**Evinrude Motor Company**
**414 Evinrude Bldg., Milwaukee, Wis.**

***Distributors:***

**69 Cortlandt St., New York, N. Y.**
**214 State St., Boston, Mass.**
**440 Market St., San Francisco, Cal.**
**211 Morrison St., Portland, Ore.**

***Service Stations:***

**Savannah, Ga.**
**5101 S. Main St., Los Angeles, Cal**
**130 Chartres St., New Orleans, La.**
**10-20 No. Howard St., Baltimore, Md.**
**137 McGill St., Montreal, Que.**
**1205 Langley St., Victoria, B. C.**

# EVINRUDE

## DETACHABLE MOTOR FOR WATERCRAFT

# BET-R-BILT TRADE MARK SOCKET WRENCHES

"ALL THAT THE NAME IMPLIES"

***A Few Outstanding and Exclusive Features:***

**ADAPTABILITY** to reach and fit any nut, bolt or screw, no matter where located, on Motor Boat, Truck, Tractor or Automobile.

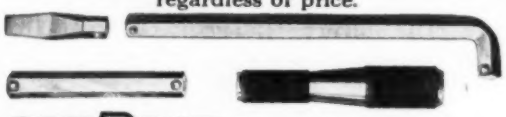
**PRACTICAL** in each and every combination.

**STRENGTH OF MATERIAL** to START the most stubborn nut, bolt or screw.

**ENDURANCE** in the hands of the skilled mechanic as well as the boat owner.

**COMPACTNESS** in design, occupying least possible space.

**USEFULNESS** to a greater degree than any other wrench now on the market, regardless of price.



## BET-R-BILT Combinations

The SCREW-DRIVER BLADE is hammered from a high CARBON TOOL STEEL, heat treated, then drawn to a fine temper, fits into the small socket of the KNURLED HANDLE, and when used in combination as a SCREW-DRIVER is without EQUAL and fills a long felt want.

A steel ball backed up by a spring forms a friction bearing on each end of the lever and extension to prevent the sockets from coming off.

Levers fit all sockets.

## BET-R-BILT Sockets

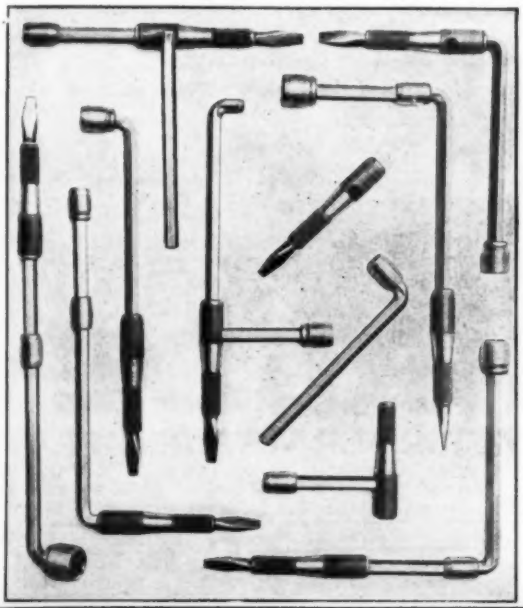
Are of superior design and workmanship and machined from an extra HIGH GRADE BAR STOCK STEEL. Special hardening and heat treatment, together with rigid factory inspection of each and every part, produces a socket possessing GREAT STRENGTH and SHOCK RESISTING QUALITIES.

The taper of the socket end enables the user to get at any nut or bolt that is close to a shoulder, at the sacrifice of none of its strength.

The No. 1 set, with only twelve component parts, gives 125 distinct combinations. Instantly various lengths of shank or leverage can be obtained with either a T, offset or L handle.

The exclusive offset combinations, both with sockets or screw-driver, find great favor with the car owner and mechanic.

Below are pictured some of the combinations with which you may have any style of socket wrench or screw-driver at your disposal.



PATENT APPL'D FOR

Each part is rigidly inspected, packed in a small, compact wooden box and is

***FULLY GUARANTEED to be as Represented.***

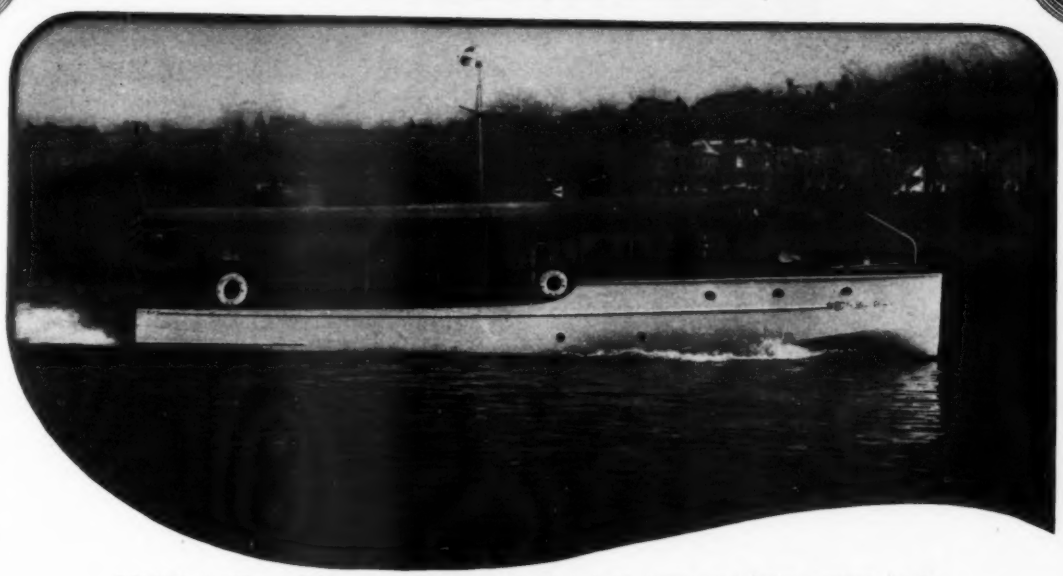
*Sold by the best dealers and jobbers. If yours doesn't handle the BET-R-BILT set, write us direct for prices.*

*MANUFACTURED BY*

**ROBINSON**
**EQUIPMENT COMPANY**
**WALTHAM, MASS.**


*Advertising Index will be found on page 142*

MAKERS OF FINE YACHTS.



*ORIANA II—53'-0" x 12'-6" x 3'-3". Built by New York Yacht, Launch and Engine Company for Mr. Arthur T. Murray, President of the American Bosch Magneto Company*

# Even Now

You can have a New York Yacht, Launch and Engine Company craft to enjoy the coming season with.

Tell us your ideas and we will incorporate them in a design for your approval and build your boat for summer use.

For Sale or Charter we have ready for use

**Two 85' x 19' House Yachts**

**Two 73' x 17' House Yachts**

**One 108' x 12' Cruising Yacht**

**One 100' x 16' Cruising Yacht**

**in addition to various types of speed runabouts.**

**We manufacture the celebrated 20th CENTURY MOTORS**

**400 to 500 R. P. M.**
**Heavy duty type**

**2 cyl., 15-20 B. H. P.**
**4 cyl., 40-50 B. H. P.**
**6 cyl., 65-75 B. H. P.**

**All motors 6½" bore x 8½" stroke, 4 cycle**

NEW YORK YACHT, LAUNCH & ENGINE CO.

BUILDERS

MORRIS HEIGHTS, NEW YORK CITY.

# *"Second to None!"*

When K-A-U-R-I Waterproof Spar Varnish was first introduced several years ago, it was claimed for it that there was no more durable varnish on the market. We can still make that claim.

The photo above illustrates a test which was completed recently. Twenty boards were finished with twenty of the best-known Spar Varnishes, and exposed as shown for one year.

There was no partiality shown, for from the beginning to the end of this test, the different varnishes and panels were known by number only.

Inspections were made once a month and at the end of the year, the rack was taken down and the results noted.

Some of the "Spar Varnishes" had disappeared entirely, others had only checked and some looked especially well for so hard an exposure.

But it can honestly be said that *Kauri Waterproof Varnish was "Second to None."*

(Modesty prevents our saying it looked the best.)

Aside from its durable quality, Kauri Varnish is very quick drying and absolutely waterproof. When doing over the bright work on your boat this Spring, give Kauri a trial and you will always insist upon having it again.

For sale in Paint, Marine Supply and Hardware Stores. If your dealer cannot supply you, send to us direct.

*Trial sample will be sent on request*

***MADE BY***

## BROOKLYN VARNISH MFG. CO.

**BROOKLYN BOSTON LOS ANGELES**

*Advertising Index will be found on page 142*

Inverted V-bottom and surface propeller boats

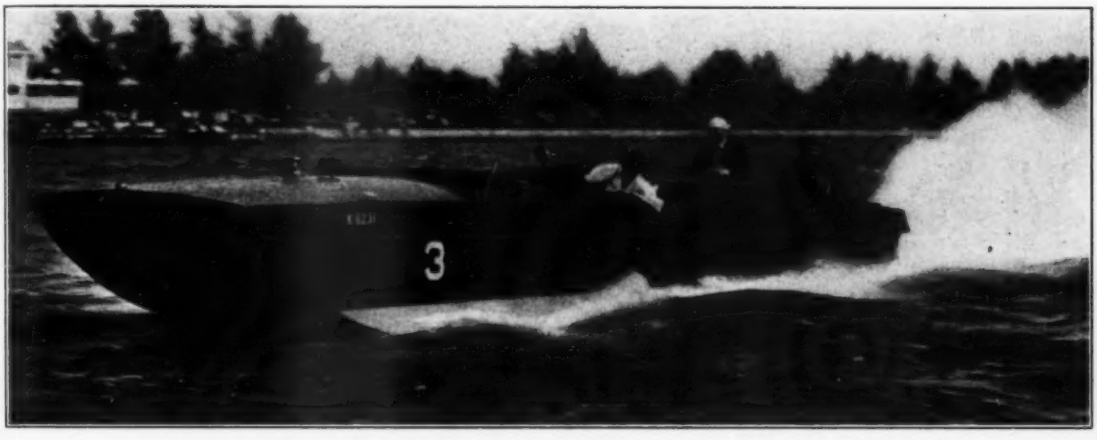
# SEA SLED

Hickman Patents in all countries

Trade Mark Reg. U. S. Pat. Off.

## BREAKS THREE WORLD'S RECORDS

1 Mile straightaway..... 47.0 MPH
2 Mile Oval..... 40.0 MPH
50 Mile Oval..... 38.8 MPH




36' by 7' Sea Sled, Orlo II, at 47.0 M.P.H. Note the complete absence of spray.

IN addition to establishing three new world's records, the Sea Sled Orlo II qualified for the Fisher Trophy Races carrying eleven passengers over the mile course at better than forty miles an hour. No other type of boat can duplicate this performance.

ORLO II has no features which are not found in other Sea Sled designs. The ability to carry heavy loads at high speed, the shallow draft, the seaworthiness, the refinement of accommodations, the ideal mechanical arrangement, and the freedom from flying spray are but a few of the features which contribute to the satisfaction of owning a Sea Sled.

18 ft. to 55 ft. Models 10 to 55 M.P.H.

## THE SEA SLED COMPANY

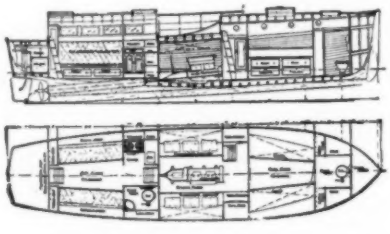
WEST MYSTIC CONNECTICUT

# "A 50-foot Ship"—36 feet long

**PERFECTION in design—a big, roomy cruiser with a graceful and well-developed hull and all the general appointments expected only in larger and more expensive craft.**

For extensive cruising, the living accommodations below are exceptionally comfortable and commodious, while the deck-room, fore and aft, provides ample space for either the family or party to fully enjoy the keen pleasures of day cruising.

It has taken skillful designing and extensive development work to combine these two features without sacrificing the first essential—seaworthiness. But the result fully justifies our assertion that the 36 ft. standardized Burger Cruiser is a "50 ft. ship—36 ft. long," because it is recognized by authorities as a notable achievement in cruiser design and construction. Expert workmanship and first class materials are reflected in every detail.



A study of this plan will indicate the spacious arrangement of the interior. Complete descriptive literature will gladly be sent to you.

Immediate deliveries from stock. Price without war tax, $4950.00 delivered at Manitowoc, Wis.

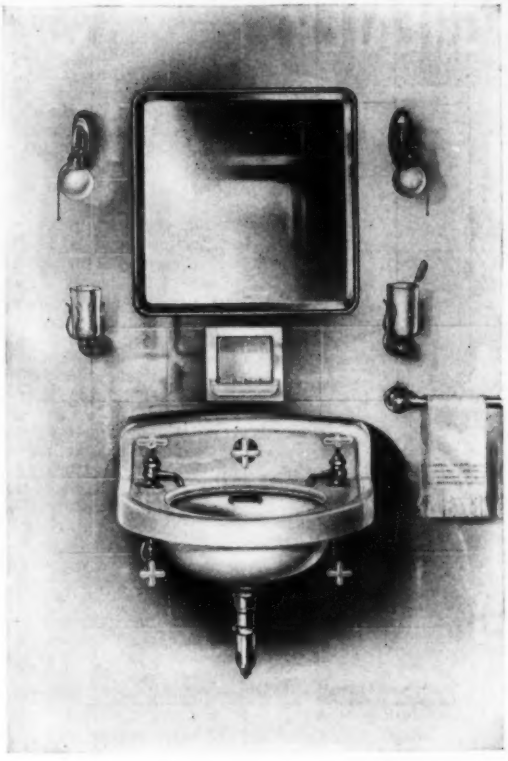
We also build a 36 ft. Runabout designed by John L. Hacker. Speed 25 miles. Complete details on request.

**BURGER BOAT COMPANY, MANITOWOC, WIS.**

**BURGER**

**BOATS BEAUTIFUL**

*Advertising Index will be found on page 132*



CRANE SERVICE

Facilitates the Selection of

# Plumbing Fixtures For Motor Boats

**and offers practical aid in the installation of sanitation equipment of first quality.**

Numerous sizes and patterns are included in our extensive line.

SALES OFFICES, WAREHOUSES AND SHOWROOMS:

BOSTON, SPRINGFIELD, HARTFORD, BRIDGEPORT, ROCHESTER, NEW YORK, ALBANY, BROOKLYN, PHILADELPHIA, READING, ATLANTIC CITY, NEWARK, CAMDEN, BALTIMORE, WASHINGTON, SYRACUSE, BUFFALO, SAVANNAH, ATLANTA, KNOXVILLE, BIRMINGHAM, MEMPHIS, LITTLE ROCK, MUSKOGEE, TULSA, OKLAHOMA CITY, WICHITA, ST. LOUIS, KANSAS CITY, TERRE HAUTE, CINCINNATI, INDIANAPOLIS, DETROIT, CHICAGO, ROCKFORD, OSHKOSH, GRAND RAPIDS, DAVENPORT, DES MOINES, OMAHA, SIOUX CITY

FOUNDED BY R. T. CRANE, 1855

CRANE CO.

836 S. MICHIGAN AVE.

CHICAGO

WORKS: CHICAGO AND BRIDGEPORT

ST. PAUL, MINNEAPOLIS, WINONA, DULUTH, FARGO, WATERTOWN, ABERDEEN, GREAT FALLS, BILLINGS, SPOKANE, SEATTLE, TACOMA, PORTLAND, POCATELLO, SALT LAKE CITY, OGDEN, SACRAMENTO, OAKLAND, SAN FRANCISCO, LOS ANGELES

CRANE LIMITED MONTREAL, TORONTO, VANCOUVER, WINNIPEG, LONDON, ENG., SYDNEY, N. S. W., QUEBEC, HALIFAX, OTTAWA, REGINA, CALGARY.

We are manufacturers of about 20,000 articles, including valves, pipe fittings and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes for all pressures and all purposes, and are distributors of pipe, heating and plumbing materials.

MORE POWER-GREATER SPEED-

Nothing will contribute more toward making a real summer than a speedy, vibrationless Koban. Attached in a few minutes to any rowboat, it gives you a fast power boat.

Does Not Shake the Boat

The Great 2-CYLINDER KOBAN ROWBOAT MOTOR

The Koban gives you more power and greater speed than any other rowboat motor because it has two cylinders. It does not shake the boat. Only by this 2-cylinder opposed construction can you avoid the continual vibration that makes riding unpleasant, opens seams and ruins rowboats. Special tilting device, for shallow water and beaching.

Write for catalog and full information

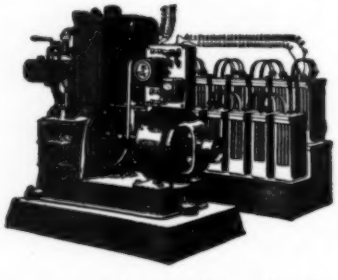
Dealers and agents write for our profit-making proposition

*The first 2-cylinder rowboat motor—the standard of its type—not an experiment.*

**Koban Manufacturing Co.** 246 South Water St. MILWAUKEE, WIS., U. S. A.

Genco Light

MARINE LIGHTING PLANT



THE more you know about the fine points of electrical construction, the more will you appreciate the superiority of the Genco-Light Marine Plant. Built in 32 and 110-volt sizes up to 6 K-W, complete with battery, and suitable for every light and power service, afloat and ashore.

Live Dealers and Agents Wanted

GENERAL GAS-ELECTRIC CO., Manufacturers

DEAN ENGINEERING COMPANY

Marine Distributors Genco Light

P. O. Box 863 Office: 417 to 421 William St., Norfolk, Va.

## *That Genial Chesapeake*

(*Continued from page* 108)

He stopped and leaned on his mower, looking at me suspiciously. "Say now, Miss," he began resentfully; but seeing me smile, he smiled too, and pushed his machine a few paces further. Then he took out a big, shiny watch. About fifteen feet more of uncut grass lay ahead of him. He mopped his brow with a large red handkerchief. "'Leven thirty," he murmured with a sigh. "Can't quit till noon—twelve o'clock's quittin' time. Guess I kin make this bit o' grass last out till twelve o'clock." Shades of trade unions, thought I; do you penetrate even here?

When the morning came for us to leave Chesapeake City the lock tenders gave us, as they explained it, a little send-off. We were presented with peaches, tomatoes, and a watermelon. As we untied the painter from off our willow tree and started to warp her round the bank to the lock,—the captain with the bow line, I with the stern,—my friend of the lawn mower came forward and gallantly took the rope from my hand. Immaculate in her new white paint, C. D. B. II was as bright and shining as a new silver dollar; as we sank between the high, slimy walls of the lock we were careful that not a single scrape or bump should mar her. The captain too, was in fine fettle, but the crew,—alas! The crew was suffering from what the captain calls pancake trouble, pursuant upon a farewell supper the night before of which pancakes had been the chef d'oeuvre.

We stopped at the landing below the locks to fill up with gasoline. Near us lay a barge carrying a miscellaneous cargo of cord-wood, furniture, automobile tires, and a brand new Ford car. In the stern sat the cook, fishing,—I knew he was the cook from a conversation he and I had had the afternoon before. He was as black as coal and very fat and bald and good natured. He was catching sunnies almost as fast as he could put his line over and pull it up, and he was baiting with little squares of some soft yellow substance. The crew, who comes of a family of ardent fishermen, forgetting the listlessness born of pancake trouble, stepped ashore and watched excitedly. A whiff,—a scent unmistakable—reached her.

"Do you always bait with cheese?" she asked faintly.

"Yas'm, yas'm, they bites gran' at cheese. Heah Miss, got a line? Try some yo'seff."

At this moment, luckily, the captain called the crew back to the ship; the tanks were full, the engine started. We cast off and puttered on down the narrow winding Back Creek, which widened as the hours passed, until we felt the fresh breeze and bounding waters of the bay.

All you Down-Easters who sing the praises of Casco Bay, with its myriad islands and harbors,—if you want to know what real cruising is, and after all, the cruiser's greatest blessing is a snug anchorage at night,—sail down to Chesapeake Bay! There you will come upon a hundred little bayous such as Still Pond; silent, peaceful, with no other inhabitants save the birds which call from somewhere in the thick, cool green of the trees. And such trees! A strip of white beach, and then a forest as deep and dark as a jungle; buttonwood, oak, and pine, topped by the slim straightness of the cedars. When the crew first looked at the shore line she thought she was a thousand miles from civilization; but soon voices and laughter,—carriage wheels, the clump-clump of a horse's hoofs, coming from somewhere beyond those trees, brought a comforting sense of the nearness of mankind.

And when you know Still Pond you have learned the Chesapeake. Wharton's Creek, Fairlee, Rock Hall, the Magothy,—Annapolis. What a place for the house boater to drop anchor for the summer! All the yachting life of the harbor,—I have seen more beautiful yachts gathered at Annapolis than in any port north of Beaufort. And the traffic of the cargo boats; graceful, substantial bug-eye schooners and little skip-jacks. And every morning the darkies bringing in their fleet of canoes,—those swift bright relics of a day that is passing; they fly by like ghosts, with their tiny masts like so many quills stuck in a piece of paper. And about the time the bacon and eggs are consumed you can wash your dishes to the tune of the finest military band in the country, for the middies are marching down at the Naval Academy, and the strains of the music float across the water as clear as a bell.

Once up the Christiania River at Wilmington, we berthed C. D. B. II almost under the stern of a thousand ton ocean-going bark that was up on the ways for repairs. Hardly had we trimmed things up ship-shape and sat down to our corned beef and onions, when the owner and captain of the barge, a handsome old fellow who had spent forty years at sea, came aboard to look our craft over. He sat in the cabin puffing at his pipe, his hands on his knees, and examined us in a puzzled sort of way. After he had learned our names, our hailing port, our profession, and our respective ages, he cocked his head on one side and appealed to the professor.

"Say," he said slowly, "Affable young fella' like you;—why don't you give up teachin' and go to sea?"

Perhaps, some day,—who knows?

*Advertising Index will be found on page 142*

# A Real Prize Contest For Users of RAJAH SPARK PLUGS

Standard

Thumb Nut With all Rajah plugs unless otherwise ordered. Also ball and stud types

Thrust Terminal with ferrule to fit any size cable

IF you could read our daily mail or run through our files you would quickly come to the conclusion that the Rajah is a truly exceptional spark plug. Testimonial letters, stories of unusual service, durability and satisfaction, from users whose requirements duplicate yours — these are more convincing than any amount of "selling talk."

We have received literally thousands of such letters during our business experience of *more than twenty years.* And still there must be many thousands more of similar instances and incidents we would like to know about.

So we offer to present a set of twelve standard Rajah Spark Plugs — any type or thread—for the most interesting letter of not more than two hundred words telling of the user's experience with Rajah Plugs. This offer is limited to those who have used Rajah Plugs prior to April 1st, 1921. Other letters which we find good enough to print in MoToR BoatinG will each be rewarded with a set of six standard Rajah Plugs.

Letters must be received by May 15th, 1921. We are to be the judge of their value. Not literary merit but interest, facts and value of information contained will be the points considered. Instances of motor boat service preferred.

If you are not a Rajah user, *don't delay longer.* Buy a complete set of Rajah Plugs today and know what it means to have *ignition absolutely sure.* All types and threads.

*If your dealer does not sell Rajah Plugs, send us his name, let us know the size you want, and we will see that you are supplied.*

**Standard Rajah Plug $1.00 Giant Rajah Plug $1.25 Waterproof Rajah Plug $1.50**

Manufactured by **RAJAH AUTO SUPPLY CO.**
**BLOOMFIELD, N. J., U. S. A.**

## *Here are a few interesting examples—Note the dates*

Morris Heights, New York City,
Sept. 6th, 1905.

Since our preliminary order for the Rajah spark plugs, we have continued to use them exclusive of all others and will do so probably so long as they give such eminently satisfactory service. Therefore, we have no hesitancy in recommending their adoption by all gasoline engine users.

Yours very respectfully,
CAS ENGINE & POWER CO., and
CHAS. L. SEABURY & CO., CONS.
Jno. J. Amory, President.

Sacramento, Cal.
Nov. 14th, 1908.

About 9 out of every 10 motor boats on our river are equipped with Rajah plugs and hoods, in fact no one seems to think of using any other.

I have a 2-cylinder 4-cycle engine with the spark plug opening in the very worst part of combustion chamber, i. e., where it gets nothing but intense heat and soot.

I threw away the plugs that came with the engine and put in Rajah a year ago and so far have not even had to examine them to see if they had become foul or in danger of such.

In looks your Plug does not look very much different from some others but it evidently is. What I want is a catalog of your complete line. I am agent for engines and boats and boat frames.

Very truly yours,
H. H. Earle.

Cincinnati, Ohio.
Sept. 17th, 1910.

I have just returned from my summer outing and I wish to drop you a few lines in reference to the Rajah Hoods and Nipples which I purchased from you last Spring.

I found them very satisfactory in every way, completely obviating any possibility of short circuiting through water or spray getting on the plug. I would not care to operate an open boat without your spark plug protector and any one using them will be well pleased and perfectly satisfied I know.

Yours truly,
L. B. Reakiot.

Davenport, Iowa.
July 15th, 1915.

Wish to thank you for the plugs sent me for use in the boat races for the coming year and to advise you that I made a new record in Class C at the past regatta of the M. V. P. B. A. at Hannibal, Mo., July 5, 6 and 7.

With Ugly Duckling IV I raised the record from 32 miles an hour to 36¼ miles an hour and never had a single bit of spark plug trouble during the entire regatta. I cannot speak too highly of the Rajah plugs as they have done all and more than could be expected.

Yours truly,
HARRY GODLEY.

BEFORE

Use Jeffery's Waterproof Marine Glue

AFTER

JEFFERY'S MARINE GLUE has certainly done the trick. She doesn't leak a drop now
Oh Boy! Another one! This is a little different than continously bailing out the boat

And Enjoy Every Minute of Your Outing

# DOES YOUR BOAT LEAK?

*Send for our Booklets "How to Make Your Boat Leakproof" and "Marine Glue—What to Use and How to Use It"*

Any old boat, so long as the frames are in fair condition, can be made water-tight by following the instructions in the above booklets. This applies to anything that floats, from a canoe to a yacht. Wood or steel. Put your leak troubles up to us, and we will help you to stop them.

For more than 75 years Jeffery's Marine Glue has been the choice of the foremost boat builders of the world.

Jeffery's is a product that has not varied from the strict line of quality—it is not a competitive commodity made to meet a price.

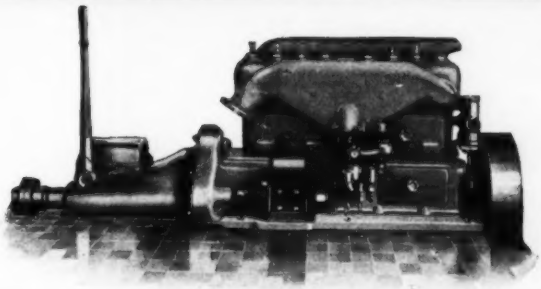
## JEFFERY'S WATERPROOF MARINE GLUE

IN ALL THE VARIOUS GRADES

*For sale by all Yacht, Boat and Canoe Supply Houses, Hardware, Paint and Oil and Sporting Goods Dealers*

**L. W. FERDINAND & CO., 152 Kneeland St., Boston, 11, Mass.**


*Advertising Index will be found on page 142*



## Women Like to Drive Boats Equipped With This Motor

It's simple as driving a car. You step into the cockpit, push your starter button, throw in your gear and you slip away from the dock as smoothly as a $5000.00 car glides away from the curb.

And you do it as quietly and with the same sense of confidence that you have in the perfect operation of your motor. For the Caille Aristocrat Motor is positively the finest marine motor of its size in the world. You simply forget "what's going on under the hood."

The Caille Aristocrat Motor develops 14 H. P. It is of the 4-cycle, 4-cylinder type. Ideal for good boats up to 35 feet long. It comes complete with all instruments ready for mounting.

The Caille Aristocrat is electrically started and furnishes current for lighting boat. Has Bosch magneto, Schebler carburetor, Willard storage batteries and Caille reverse gear which is integral with motor.

This motor is entirely enclosed, quiet and cleanly in operation. It is finished in French gray enamel with nickel trimmings. Insist that your boat builder install a Caille Aristocrat.

*For full particulars address us or nearest distributor*

**THE CAILLE PERFECTION MOTOR COMPANY**
**44 Caille Building, Detroit, Michigan**

G. H. Masten Co.
38 E. Ninth St., N. Y.

T. T. Burchfield Co.
604 Arch St., Philadelphia

Toledo Sales & Engine Co.
6 St. Clair St., Toledo

Woodhouse-Schmitz Engine Co.
62 Marion St., Seattle

Standard Supply & Hardware Co.
822 Tchoupitoulas St., New Orleans

Burroughs-McMeekin Co.
30 E. Bay St., Jacksonville, Fla.

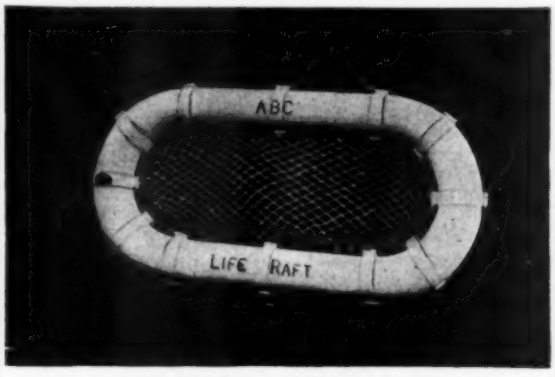
Unger & Mahon
Pratt & Gay Sts., Baltimore, Md.

Gray Aldrich Co.
84 Atlantic Ave., Boston

William Grossman
1630 Pine St., St. Louis

Perfection Motor Co.
380 St. James St., Montreal, Canada

# CAILLE
# Aristocrat Motor




FOR SAFETY AND SPORT

equip your boat this year with an

A. B. C. FIVE-PERSON LIFE RAFT

A solid 6" ring of treated Balsa canvas covered; 5 ft. long, 2 ft. 6 in. wide, with flush net platform. Weighs only about forty pounds.

Strong and easily handled and stowed. Fine for deep water swimming.

*Also made with drop-slat platform, this type conforming with U. S. Steamboat Inspection Service Regulations.*

For further information address

*Liferaft Department*

AMERICAN BALSA COMPANY, Inc.

50 East 42nd Street New York

CHASE

Leatherwove

MADE BY SANFORD MILLS
SANFORD, ME.

'Tis good news to hear that Chase Leatherwove has been proclaimed "the better boat upholstery of today."

*Re-upholster with Chase Leatherwove*

*Write for Samples*

L. C. CHASE & CO.....BOSTON

New York Detroit San Francisco Chicago

## *Simplified Safety at Sea*

*(Continued from page 94)*

It should be borne in mind that the characteristics of every light vessel as to rig, type, etc. are different so that from the description of any particular light vessel in the Light List it is very easy to recognize her.

### LIGHT VESSELS

*(See Figs. 82-89)*

Light vessels are generally employed for marking dangers at sea, approaches or entrances to harbors, or important points in the courses of vessels, where a lighthouse would not be feasible or economical. They are of particular value in providing both a light and a fog signal which may be approached closed-to, thus enabling motor boatment to fix their position at sea with reasonable certainty. In this respect light vessels are superior to lighthouses, as in the case of the latter, in the majority of instances, due allowances must be made for a safe distance in passing. A valuable secondary advantage is the fact that light vessels may be shifted to meet varying conditions to traffic, such as changes in shoals or channels, use of deeper draft vessels, and similar contingencies.

Careful attention has been given to the design of vessels suitable for exposed outside stations. Wooden construction was the rule up to year 1882, when the first iron light vessel, was built. About the same time several vessels of the composite type, with steel frames and wooden sheathing, were constructed; but the modern tendency has been toward all-steel construction. Another practical feature of design which has greatly increased the efficiency of light vessels is the use of propelling machinery, thus enabling them to proceed to and from their stations under their own power and to assist them in maintaining their positions in heavy weather.

Light vessels on seacoast stations are also assigned international code-signal letter flags, identifying the geographical locality, which they display to passing vessels when it is necessary to warn them.

Light vessels are brought in from station at regular intervals for docking, overhauling, and repair, and during the interim a relief light vessel is placed on the station. Care is taken when practicable to have the relief ships so equipped that they can show the identical light of the station ship at night and during fog the identical fog signal, also sounding the same code number of the submarine bell, and displaying the international signal flags described above of the vessel relieved. Relief vessels are commonly painted red, with the middle third of the hull white, bearing thereon the word relief in large black letters. They also exhibit an oval daymark on the spring stay, midway between the two masts, when two are provided.

To avoid confusion when light vessels are off their stations while proceeding to or from port, or during stress of weather, they fly under such circumstances the signal letters QE, a square yellow flag over a triangular flag with vertical bands of red, white, and blue meaning in the international code Lightship is not at anchor on her station.

*Distress Signals—In the Daytime*

1. A gun or other explosive signal fired at intervals of about a minute.
2. The international code signal of distress, NC.
3. The distance signal consisting of a square flag, having either above or below it a ball, or something resembling a ball.
4. The continuous sounding of any fog-signaling apparatus.
5. The national ensign, hoisted upside down.

*Distress Signals—At Night*

1. A gun or other explosive signal fied at intervals of about a minute.
2. Flames on the vessel (as from a burning tar barrel, oil barrel, etc.)
3. Rockets or shells, throwing stars of any color, etc., fired one at a time at short intervals.
4. The continuous sounding of any fog-signaling apparatus.

*International Life-Saving Signals*

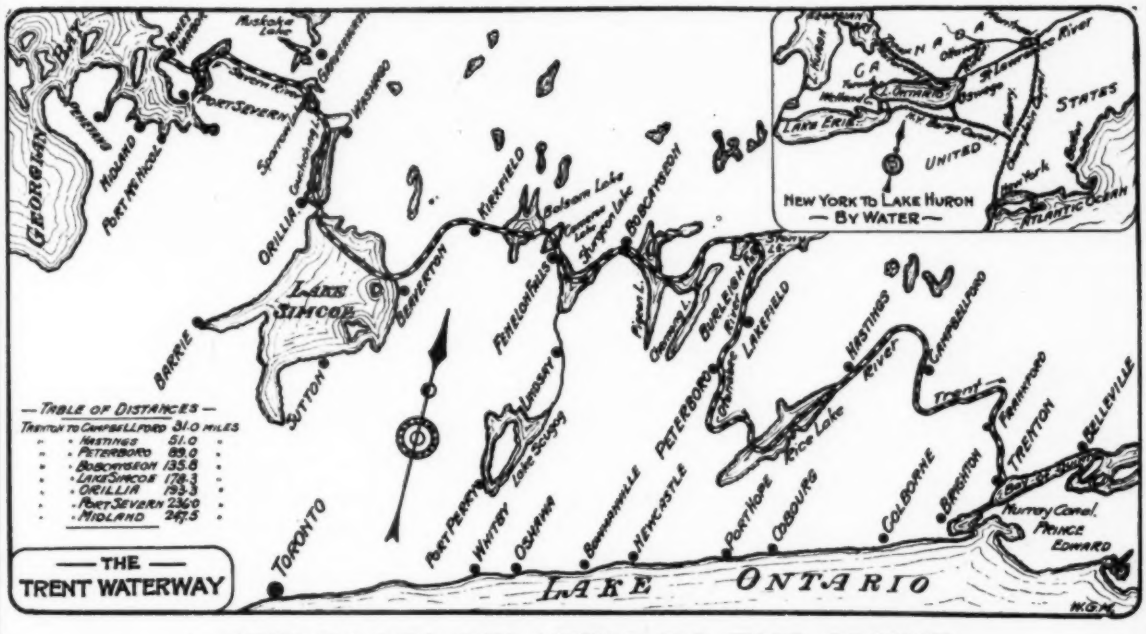
1. Upon discovery of a wreck by night, the life-saving force will burn a red pyrotechnic light or a red rocket to signify "You are seen; assistance will be given as soon as possible."
2. A red flag waved on shore by day, or a red light, red rocket, or red Roman candle displayed by night, will signify, "Haul away."
3. A white flag waved on shore by day, or a white light slowly swung back and forth, or a white rocket or white Roman candle fired by night, will signify, "Slack away."
4. Two flags, a white and a red, waved at the same time on shore by day, or two lights, a white and a red, slowly swung at the same time, or a blue pyrotechnic light burned by night, will signify "Do not attempt to land in your own boats; it is impossible."
5. A man on shore beckoning by day, or two torches burning near together by night, will signify, "This is the best place to land."

*Advertising Index will be found on page 142*

# The Most Picturesque Motor Boat Cruise in America

## *TRENT WATERWAY THROUGH CENTRAL ONTARIO, CANADA.*

### A Speedy Cruise Through Beautiful Lakes and Rivers For Over Two Hundred Miles.

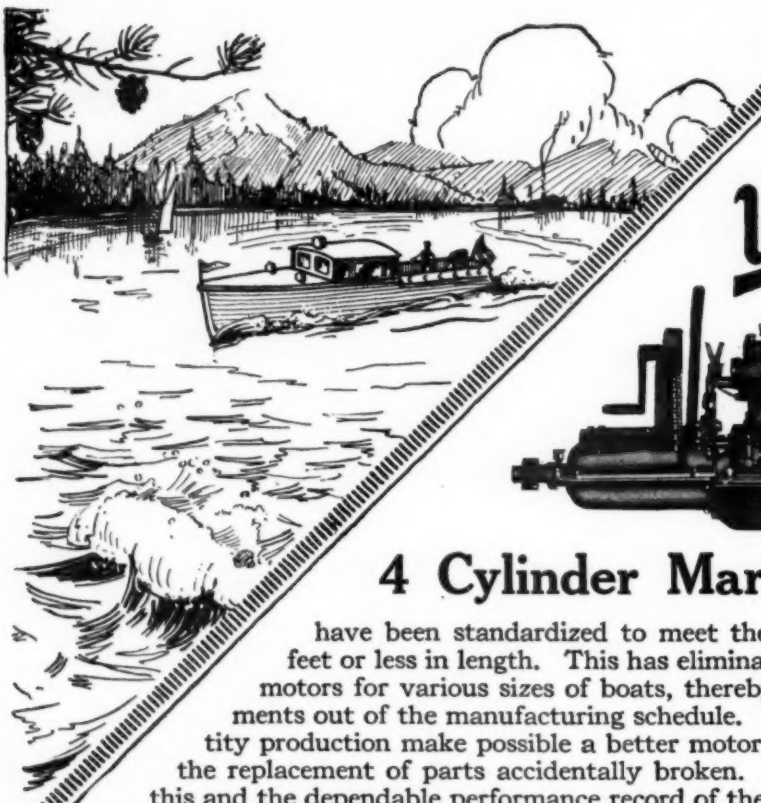



## A FEW FACTS RELATING TO THE CRUISE

1. No lockage charges—good service.
2. No customs restrictions.
3. Draft—8 feet, Lake Ontario to Peterborough; 6 feet Peterborough to Washago.
4. From Washago to Georgian Bay for boats 33 feet length, 9 feet beam.
5. Locks to Lake Simcoe 33 feet wide; max. length steamer or motorboat 118 feet; max. length wide barge 104 feet.
6. Sunday locking at certain hours.
7. Buoyed practically entire route. Going upstream—Keep RED on Right; keep BLACK or WHITE on Left.
8. Peterborough and Kirkfield Hydraulic Lift Locks 65 feet and 48 feet respectively.
9. Water and Hydro Electric development through entire route.
10. Excellent camping and fishing grounds.
11. Supplies of all kinds available en route.
12. Modern hotel and rooming accommodation at all cities, towns, villages and summer resorts.
13. From Lake Simcoe, short radial run to Toronto.
14. From Lake Ontario or Washago, short rail journey to Muskoka Lakes.

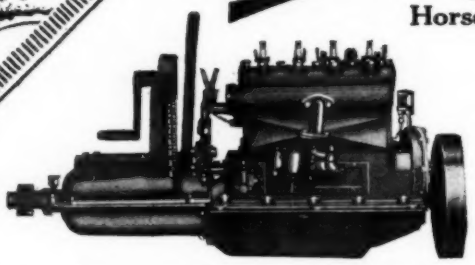
*This is the Famous "Champlain's Historic Route" from Lake Huron to Lake Ontario*

For any further information write the Secretaries, Boards of Trade of Trenton, Campbellford, Hastings, Lakefield, Bobcaygeon, Lindsay, Fenelon Falls, Beaverton, Sutton, Barrie, Orillia, Port Severn, Midland, Penetang, or the SECRETARY, TRENT WATERWAY DEVELOPMENT ASSOCIATION, Peterborough, Ontario, Canada.



# Universal

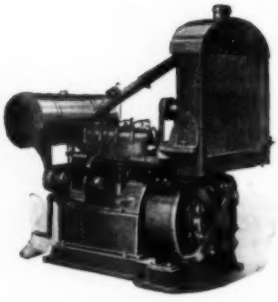
**9-12 Horse Power**



## 4 Cylinder Marine Motors

have been standardized to meet the requirements of boats 30 feet or less in length. This has eliminated the designing of special motors for various sizes of boats, thereby cutting expensive experiments out of the manufacturing schedule. Standardization and quantity production make possible a better motor at lower cost and simplify the replacement of parts accidentally broken. That motorists appreciate this and the dependable performance record of the Universal, is evidenced by the widespread voluntary boosting of Universal Motors.

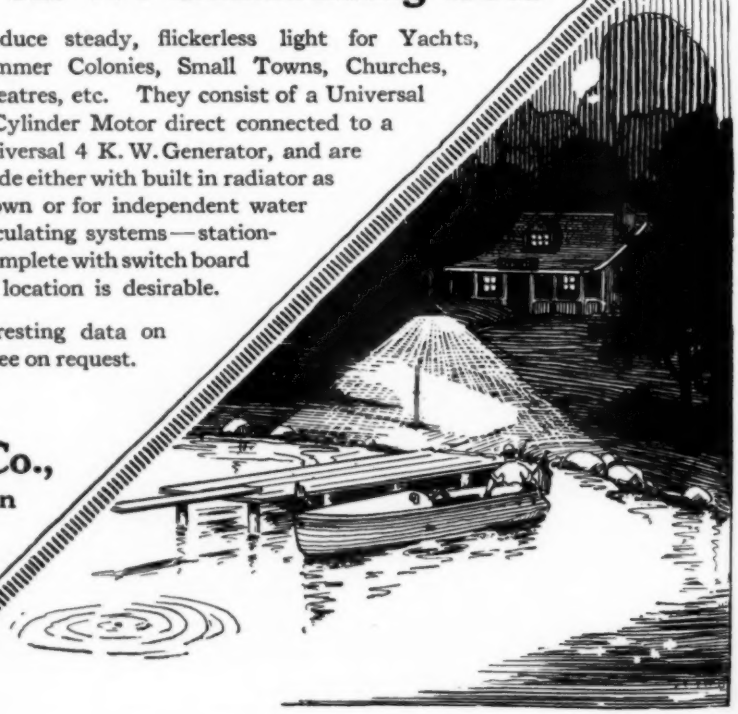
Send for Bulletin No. 29 before specifying the motor for your boat.



## 4 K. W. Generating Sets

produce steady, flickerless light for Yachts, Summer Colonies, Small Towns, Churches, Theatres, etc. They consist of a Universal 4 Cylinder Motor direct connected to a Universal 4 K. W. Generator, and are made either with built in radiator as shown or for independent water circulating systems—stationary types, or mounted on trucks complete with switch board for use where frequent shift of location is desirable.

Bulletin No. 30 containing interesting data on lighting problems will be mailed free on request. ***Send for it today.***



**Universal Motor Co.,**
**Oshkosh, Wisconsin**

***Not connected with any other company using the name "Universal."***

*Advertising Index will be found on page 142*

Holly, Washington
January 21,1920

Coast Engine Co.
Seattle, Wash
Mr. Fred Hoyt

Gentlemen:

Just finished overhauling the Burnoil engine in the "Delphi", installed three years ago--put in new rings (Gill). I did n't find a teaspoon full of carbon in the whole engine and it's been 14 months since the head was off before.

Three years expense:

| | |
|---|---|
| New cup | $4.50 |
| Valve grinding | $2.00 |
| Set new rings (5) | $8.30 |
| Total | $14.80 |

Yours for success
Wm E Dow

P.S.--The factory furnished a set of new rings with the spares but the Gill ring looks good so I'm going to try it out.

# Upkeep $4.93 Per Year

DODGE HEAVY OIL ENGINES are simple, durable and remarkably efficient. The fuel is fed by gravity. No high pressure pump for injecting and atomizing the oil is required or used. Electrical ignition, batteries, carburetors and other delicate electrical attachments necessary to the operation of gasoline engines are entirely eliminated. It starts by compressed air; no pre-heating by torch or electrical device; no fire hazard. The fuel admitted is controlled by governor and supplies the proper quantity for the power demand.

It is to your interest to get *all* of the literature on these remarkable engines.

**Dodge Sales and Engineering Co.**

*Distributors of*
**Dodge Heavy Oil Engines**
*(Formerly Burnoil Engines)*
***Built by* Dodge Manufacturing Company**
**(*Plant 4*) Mishawaka, Indiana, U. S. A.**

# DODGE
## Heavy Oil Engines

*Made in* 1, 2, 3, 4 *and* 6 *cylinder,* 12½, 25, 37½, 50 *and* 75 *H. P. All parts standardized and interchangeable.*

### Operating cost less than $.01 per mile for a 12½ H. P. engine

"Fuel oil costs us $2.10 per barrel of 42 gallons and lubricating oil 23 cents by the barrel. This makes the cost of operating the boat less than one cent a mile, usually about $1.30 on a 150-mile round trip."

DID YOU EVER EXAMINE YOUR GASOLINE tank? Ever wonder whether its construction increased or minimized the possibility of a leak—a fire—an explosion—even your own safety?

Equip your boat with one of these everlasting, rivetless, "Safety First" tanks and stop worrying about explosions.

Made of the finest drawn steel—tested and proved—
you can take pride in the ownership of a Jasco Tank.

THERE'S A JASCO TANK MADE ESPECIALLY FOR YOUR BOAT

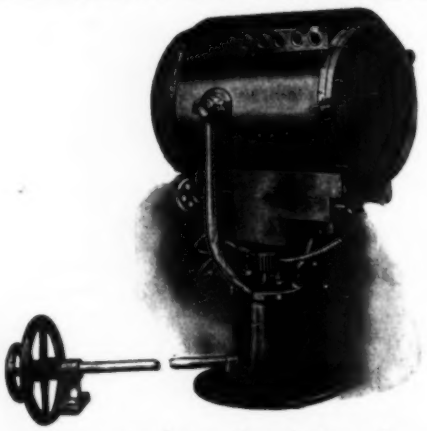
*Write us today. We will gladly send you descriptive literature.*

**JANNEY, STEINMETZ & COMPANY**

Main Office, Philadelphia New York Office, Hudson Terminal Bldg.



**CARLISLE & FINCH ELECTRIC SEARCHLIGHTS**



have for years been the choice of careful motor boat and ship owners. Made in all diameters, from 7" to 60". Used on every size craft from motor boat and yacht to battleship and ocean liner.

*The Carlisle & Finch catalog of searchlights will be mailed to any boat owner, builder and marine architect on request*

**THE CARLISLE & FINCH COMPANY**

261 East Clifton Ave. Cincinnati, Ohio


## *More Motor Boatmen Enroll in Correspondence Course*

(*Continued from page* 18)

Lesson No. 3, the questions of which are published in this issue, will be turned over to the Examiners on April 30th. The names of those who pass Lesson No. 2, whose answers are received by April 30th, will be published in June MoToR BoatinG. Those whose answers to Lesson No. 2 are received subsequent to April 30th will not be turned over to the Examiners until May 31st. The names of the successful ones will be published in the July issue of MoToR BoatinG. Those answers which reach us at a later date will follow the same general scheme.

It is not too late to enroll now if you have not already done so. All you have to do is to send your name to the editor of MoToR BoatinG. There is no charge now or later. Lesson No. 1 was published in February MoToR BoatinG. There will be a lesson in each issue of MoToR BoatinG for the next ten or twelve months. The questions to be answered by those enrolled are in the issue following the issue containing the lesson itself. After the publication of the last article or lesson, those who have submitted answers to each lesson and have received a mark of 80 per cent or better will be entitled to MoToR BoatinG's Pilot Certificate, suitable for framing, certifying that the one in whose name the Pilot Certificate is issued has pursued MoToR BoatinG's Course in Small Boat Handling, Seamanship and Piloting and by applying the knowledge gained is capable of handling a motor craft on the coastwise and inland waters of the United States.

### Subjects Which Will Be Covered in Various Lessons

*Lesson No.*

1. Rules of the Road, Rights of Way, Proper Whistle Signals, Duty When Underway, Day and Night Sailing.
2. Types and Classes of Motor Boats and other Power and Sailing Vessels, Lights for All Classes of Vessels.
3. Navigation and Government Lights, Lighthouses, Lightships, Range Lights and their Characteristics and Classification, Aids to Navigation, Distress Signals by Day and Night, U. S. Coast Guard Signals, Wind and Weather Signals, Fog Signals for Various Types of Boats, Day Marks for Vessels.
4. Buoys of Various Types. Colors and Numbers, Uses and Meaning. Can, Nun, Spar, Bell, Whistling, Lighted and Combination Buoys. Starboard and Port hand Buoys, Channel, Obstruction, Anchorage and Turning Buoys.
5. Equipment Required by Law for various Types of Boats, International, Inland, Pilot and Motor Boat Rules and Regulations, Government Publications, the Light and Buoy Lists, Tide Tables, Coast Pilots, Notice to Mariners.
6. The Compass.
7. Variation, Deviation, Magnetic and True Courses, Compass Errors and their Application, Various Methods of Determining Compass Errors, Leeway.
8. The Chart, Various Kinds of Charts, Where to Obtain Them, Their Use, Various Markings on Charts, etc.
9. Nautical Instruments, the Log and Lead Line, Sounding Machines, Pelorus, Azimuth, Protractor, Parallel Rules, etc.
10. Piloting and Chart Work, Laying Courses, Determining Position by Various Methods, Allowing for Tides and Current, Danger Angles.
11. Small Motor Boat Handling, Steering, Engine Room Signals, Action of Propeller, Action of Winds and Current, Shallow Water Indications, Tide Rips, Head, Beam and Following Sea, Picking up Mooring, Making Landings at a Float and Wharf, the Dinghy, Landing in a Surf, Navigation in Fog, Crowded Waters, Anchoring, Docking, Practical Aids in Boat Handling.
12. Cruising, Proper Equipment to Carry, Keeping a Log, Sun and Clock Time, Duties of Various Members of Crew.
13. Flags and Colors, Yachting Etiquette, Signalling.

*Advertising Index will be found on page 142*

# Standardized Boats and Prices

**At last there is one place where you can come to buy the kind of motor boat you want—and you pay only about one-half what you would pay for a similar boat if built and sold under the old one-at-a-time plan of building and selling.**

***Here are two outstanding examples of the kind we handle:—***

## 26 Ft. Runabout

This handsome, speedy express V-bottom runabout is designed and built by C. C. Smith Boat & Engine Co. Length 26′. Beam 6′6″. Speed over 30 miles. Mahogany trim, seating seven. Electric starting-lighting. Powered with Hall-Scott 5¼ x 7 engine, 100 H.P. Double planked bottom. Sound, seaworthy, dry, economical. The price is only..... **$3950**

F. o. b. Algonac, Mich.—Plus Tax

## 21 Ft. Runabout

John L. Hacker, N.A., designer and builder of this fast little runabout, is proud of it. He has advanced so far in its design that its 8′ cockpit is as roomy as in most 25′ boats. It is 21′5″ long, beam 5′8″, powered with a 20 H.P. Kermath, electric starter and lighting. Mahogany trim. Will go 8 mi. on a gal. of gasoline. Speed is 18 to 20 miles an hour. The price is only **1975**

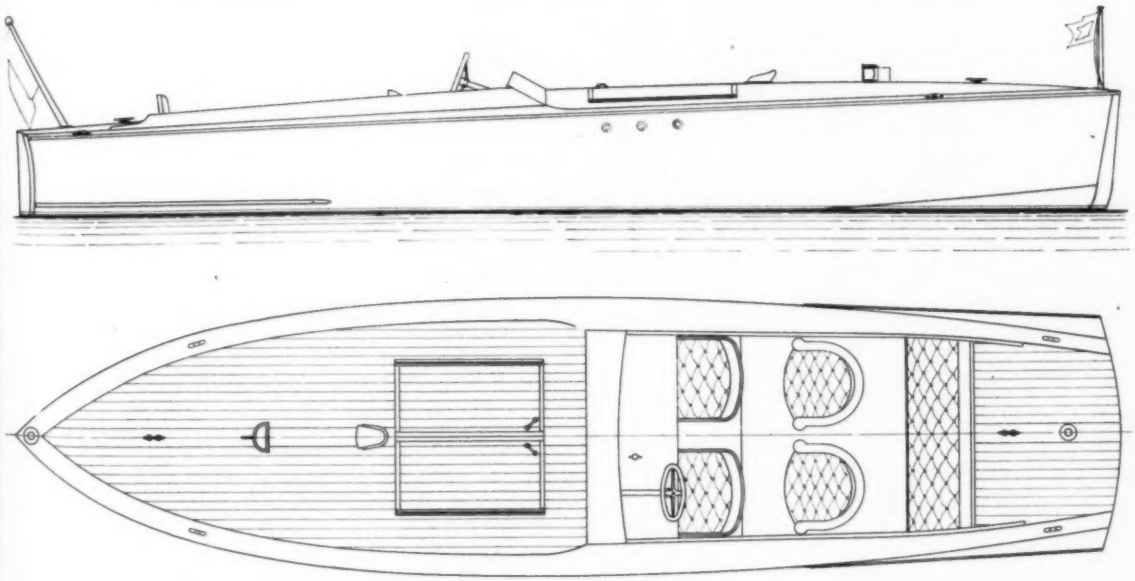
F. o. b. Mt. Clemens, Mich.—Plus Tax

**NOTE—We do not issue a "catalog". Let us know the type and price of boat that interests you, and we will write you fully**

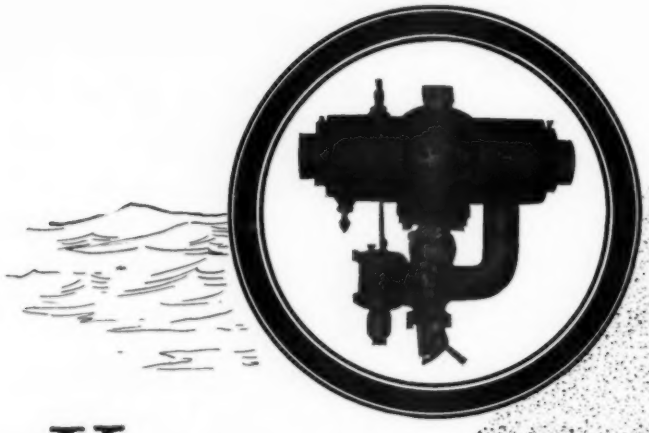
## CENTRAL MARINE SERVICE CORP.

***Selling Agents for standardized runabouts, hydroplanes, cruisers and engines***

**723 Vinton Bldg. Detroit, Mich.**



**Plan and elevation of Smith 26 ft. Express Runabout. Price $3950**



Read Our Guarantee

# Kerosene---16¢
# Gasoline----31¢

# OLSEN
# KEROSENE VAPORIZER
## For Your Boat

**GUARANTEE**

Should the OLSEN Kerosene Vaporizer fail to give complete satisfaction, we will refund the full purchase price if the vaporizer is returned to us complete, within 30 days after receipt.

The Olsen makes practical the use of kerosene instead of gasoline with any standard gasoline motor without increasing carbon deposits, decreasing power, sacrificing flexibility, or impairing lubrication.

The owner of a work schooner, having a 100 H. P. Automatic equipped with Olsen Vaporizer, has saved $3,500 in fuel bills the first year.

The Olsen will show the same proportionate saving on your motor.

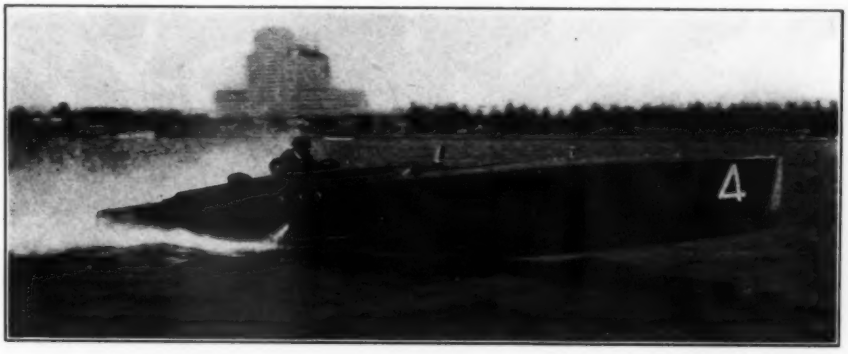
*Send today for our newest bulletin*

**UNITED STATES VAPORIZER COMPANY**

**214-A State Street** **Boston, Mass.**

*Advertising Index will be found on page 142*

# Hacker-Craft




**ADIEU is a special 32-foot seven passenger Runabout, which can be duplicated at a moderate cost. Adieu was delivered without trial, and with no tuning up, and just a bare trial at Miami, went out and won the race. Just what might be expected of a HACKER BUILT CRAFT. WE can duplicate ADIEU, carrying a speed of not less than 42 miles. Or build you a special with greater speed. If interested write.**

## A Hacker Boat won the Miami Race five times in the last six years. An enviable record.

**WE WILL BUILD TO YOUR ORDER—AT PRE-WAR PRICES**

26-Foot Special, Double Cockpit. Similar to Bear-Cat (the original of which was designed and built by us), but improved. Powered with a four cyl. Hall Scott Motor. Speed not less than 31 miles. Complete in every respect. Special price, including tax.....$6875

29-Foot Special, Double Cockpit, carrying five passengers in forward and five in aft cockpit. Powered with four cyl. Hall Scott Motor. Speed not less than 30 miles. Complete in every respect. Special price, including tax.....$7675

29-Foot Special, Double Cockpit. Carrying two passengers forward and five in aft cockpit. Having controls in either cockpit. Powered with a G-R four cylinder Sterling Motor. Speed no less than 33 miles. Complete in every respect. Special price, including tax.....$7900

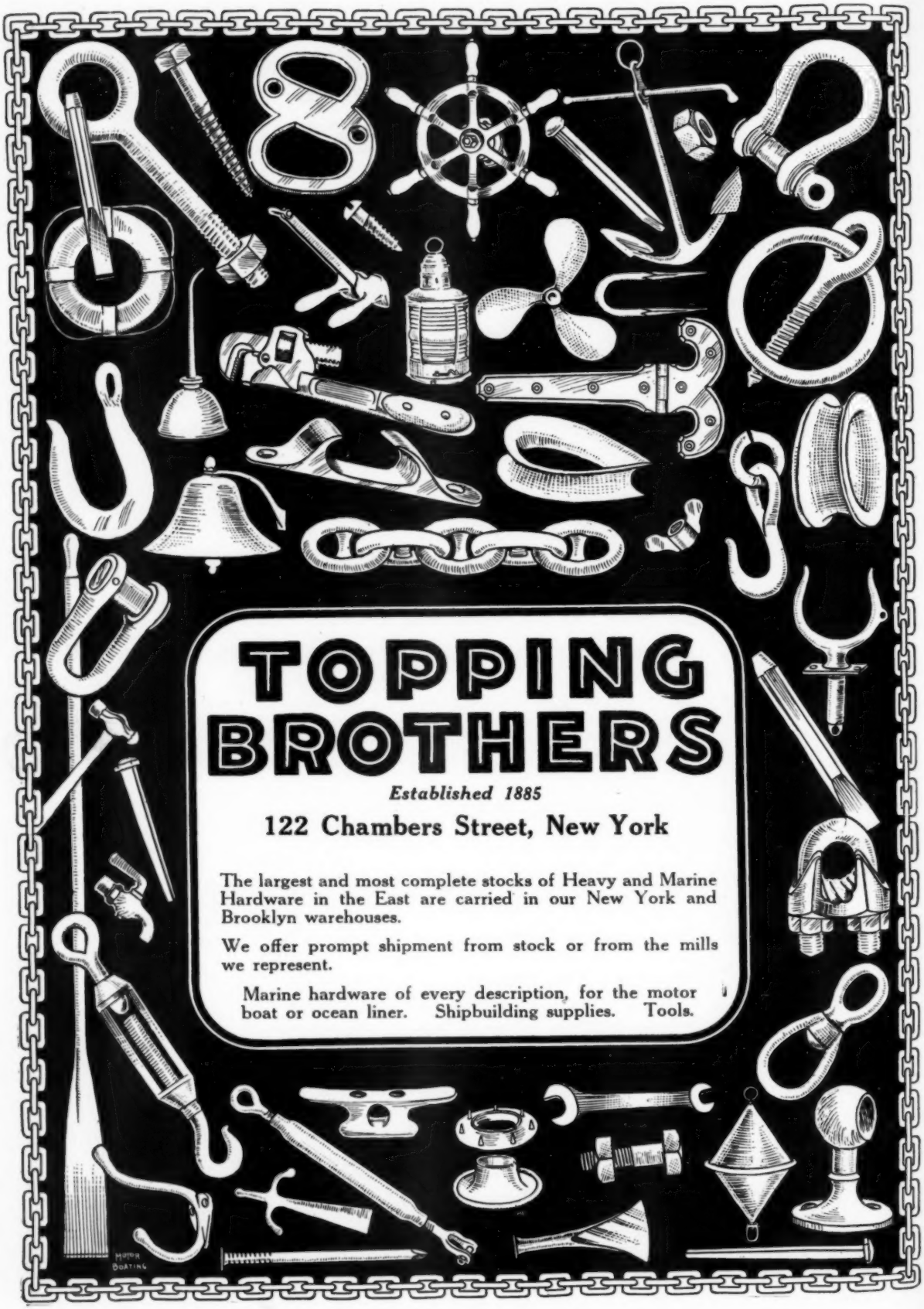
35-Foot Special, "Snap-Shot" Type. Carrying five passengers forward and five to seven aft. Powered with G-R six Sterling. Speed not less than 36 miles. Complete in every respect. Special price, including tax.....$9750

35-Foot Liberty Type. Same as above, but Liberty powered. Speed, from 45 to 50 miles. This is a De-Lux outfit, and has done actually 36 miles in 45 minutes, with seven passengers.....Price upon application

***We will figure on any high class proposition in a high speed outfit. Quality, performance, and speed guaranteed.***

## HACKER BOAT CO.

**Shops: Detroit and Mt. Clemens** **Office: 1525 Crane, Detroit**



# TOPPING BROTHERS

*Established 1885*

**122 Chambers Street, New York**

The largest and most complete stocks of Heavy and Marine Hardware in the East are carried in our New York and Brooklyn warehouses.

We offer prompt shipment from stock or from the mills we represent.

Marine hardware of every description, for the motor boat or ocean liner. Shipbuilding supplies. Tools.


*Advertising Index will be found on page 142*

# Belle Isle Boats

## Are Always A Step Ahead

**In design, ease of handling, consistency of performance, and refinement of equipment, they represent the last word in motor boat construction.**

## THE BELLE ISLE BEAR CAT

**America's Standard Runabout**

The Bear Cat Model is a 26 ft. all mahogany runabout with forward driving cockpit. It is powered with a 125 H.P. Hall-Scott motor and is guaranteed to deliver 32 miles per hour. Our illustrated catalogue will gladly be sent on request.

Immediate Delivery from Stock.

## BELLE ISLE BOAT AND ENGINE COMPANY

DETROIT, MICHIGAN

***Dealers in new and used boats and engines.***

**Immediate Delivery.**

## DAVIS "AMERICAN" DINKS

**8'-10'-12'-14' in Stock.**

**Row — Sail — or — Power. Pine mahogany or cedar planking, copper fastened, bronze fittings.**

## BELLE ISLE BOAT AND ENGINE CO.

**Motor Boat Lane** **Detroit, Mich.**

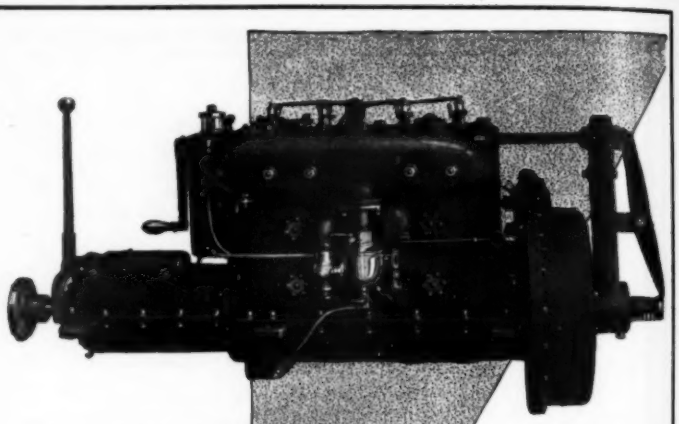
# One of these Will Meet Your Needs

Somewhere in the line of Lockwood-Ash Marine Engines is one that will meet your needs.

From the clean-cut, sturdy 2 h.p. outboard engine to the big four-cylinder power plant are varieties in size to cover a wide range of power and speed requirements.

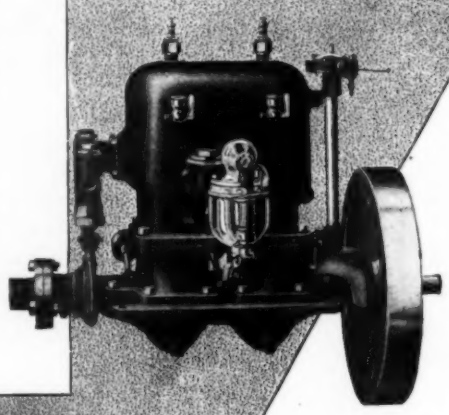
Fourteen years of experience enable Lockwood-Ash officials to act as your consulting engineers in boat engines.

Prompt and serious attention to every inquiry is a Lockwood-Ash rule.



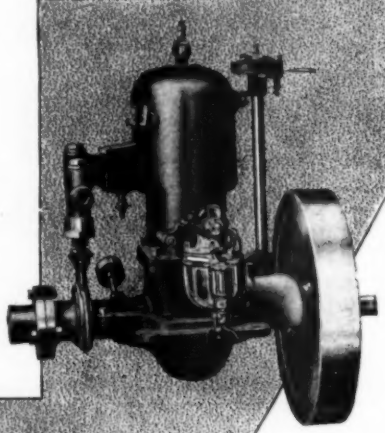
**4-Cylinder 4-Cycle**

Big brother of the Lockwood - Ash Engine family, a highly developed marine power plant. Rugged and dependable. Delivers up to 20 h.p. Built with or without rear starter.



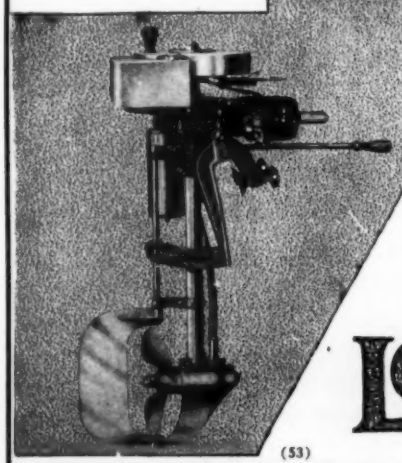
**2-Cylinder 2-Cycle**

A light, compact all-purpose engine, of few parts and readily accessible. Made in three sizes, 6-, 8- and 12-h.p. The largest size should deliver up to 15 miles per hour.



**1-Cylinder 2-Cycle**

A simple, dependable in-board engine for work or pleasure. Easy to start; easy to operate and care for. Made in 2½ and 4 h.p. sizes.



**Outboard Row Boat Engine**

This portable, 2 h.p. engine is a favorite for both pleasure and work. Easily attached to a row boat. Full of pep and thoroughly reliable.

## Why Lockwood-Ash Engines Are Worthy of Your Choice

Lockwood-Ash Marine Engines are products of an institution which always has placed quality first. Experience has pointed out the sizes that make up the well-selected line and the quality standard has dictated the thorough workmanship which is in every Lockwood-Ash Engine.

Lockwood-Ash Engines are mechanically sound—not experiments. They are built simple in principle and strong in practice.

### Ask for the Booklet

Ask for the booklet that tells all about Lockwood-Ash Engines. Also ask about the 30-day trial plan.

**LOCKWOOD-ASH MOTOR CO.**

2107 Jackson Street
JACKSON, MICHIGAN

**LOCKWOOD-ASH**
MARINE LA ENGINES

(53)

*Advertising Index will be found on page 142*

# *Don't Accept "Any Old Gear"*

When you buy a boat you don't take just any old boat. You study plans and specifications, and make sure you will get the kind of a boat you want. When you buy an engine you study catalogs, ask your friends' advice and decide after careful investigation.

Now when you get a reverse gear, don't take the first gear that comes along. Look into the subject and buy on merit. Every minute you spend in investigation may save hours of trouble later.

# STANDARD
# Reverse Gear

The more carefully you study the reverse gear market, the better chance there is you will decide on a Standard Gear. Here is a gear that has every feature and quality you want. It will give you longer and better service, with less trouble, delay and expense. Any gear will start and stop, drive forward and reverse—but that isn't enough.

**Oil Tight Case**—All enclosed; keeps the grease in and the dirt out; can't spatter your boat or your clothes. Oil bath makes wear practically nothing.

**Big Sturdy Parts**—Every part is made of the finest materials, accurately machined and much stronger than necessary. Big bearing surfaces prevent wear. Perfect cut gears prevent noise and vibration. Breakage is almost impossible.

**Large Powerful Clutch**—The clutch is expanding type with unusually large friction surface. It works smoothly, takes hold gradually and hangs on to any load without slipping.

**Ball Thrust Bearing**—Built into the case and operates in oil bath. An integral part of the Standard—not an after-thought.

**Simple Adjustment**—All ordinary adjustments can be made on the outside, without even stopping the motor.

## Standard Gear Company

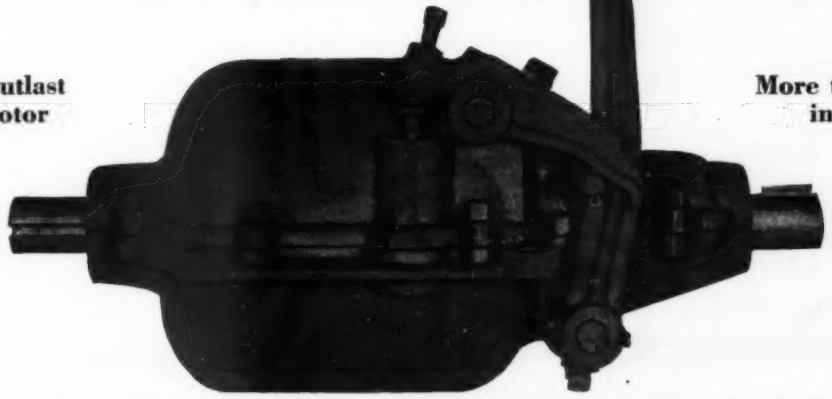
**5928 Commonwealth Ave. Detroit, Mich., U. S. A.**

***Write today for complete description, dimensions and prices. Mention size and type of your boat or make and h.p. of your engine.***

***Practically all engine manufacturers, dealers and boat builders will supply you a genuine Standard Gear if you insist when you place your order.***

Eastern Distributors
**BRUNS, KIMBALL & CO.**
**New York & Philadelphia**

**Built to outlast your motor**



**More than 30,000 in service**

# Filter Your Gasoline

DIRTY gasoline causes more trouble for boat owners than all the other troubles combined. Dirt, rust, lint and drops of water collect in your gasoline tank, no matter how careful you are. When these impurities reach the carburetor they obstruct and clog the delicate spray nozzle.

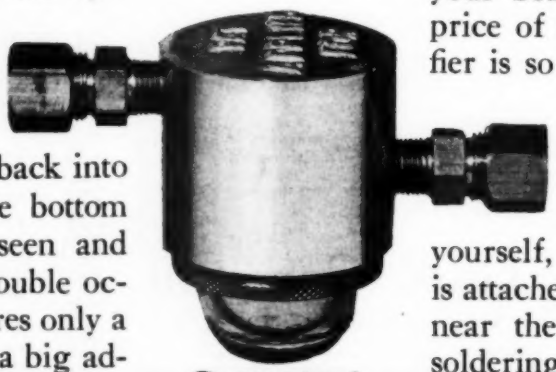
Uneven engine operation is bound to follow. Missing explosions, hard starting, fouled spark plugs—sometimes completely stopping the engine at the most inconvenient or dangerous moment.

You can't expect full power and maximum revolutions under such conditions. You can't get full value out of the gasoline you burn unless you have a

# Wetherholt Visible Gasoline Purifier

The Wetherholt is the simplest, lowest priced, most effective gasoline strainer ever made. It can't get out of order and will outlast your engine. A fine mesh bronze screen filters out all the water and impurities. These drop back into the glass bowl at the bottom where they can be seen and cleaned out before trouble occurs. Cleaning requires only a few seconds, and it's a big advantage that you don't have to take the filter apart to see whether it needs cleaning.

**$3.50**



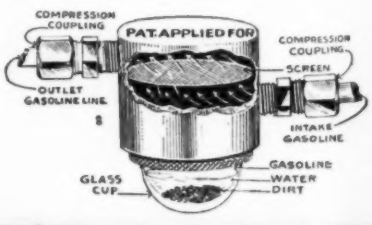
**Guaranteed**

***We will return your money if you return the Purifier in 30 Days. Try it! You can't lose.***

Don't try to get through another season without a good strainer. Get one now, before your boat is in service. The price of the Wetherholt Purifier is so low you can't afford to go without it.

You can install the Wetherholt Purifier yourself, in a few minutes. It is attached in the gasoline line, near the carburetor, without soldering or threading. A hack-saw or file, small wrench or pair of pliers are the only tools required.

***If your dealer hasn't the Wetherholt Purifier, send your order and remittance direct to us***




**AUTOMOTIVE MFG. CORP.**

**Strauss Bldg., Clark and Madison Sts., Chicago, Ill.**

*Advertising Index will be found on page 142*

Knox
VALVE IN NECK

*"Steady Service"*

# *The 1921 Engine for 1921 Boats*

If you are building a new boat or putting a new engine in your present boat, take advantage of 1921 progress in engine design. Don't buy a motor of old construction or out-of-date design. Get the newest, the latest, the best.

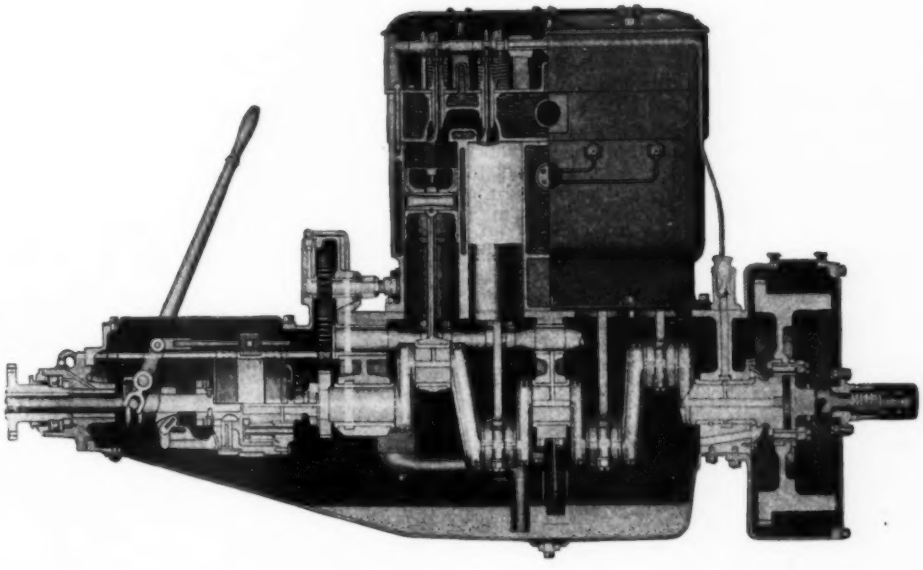
The Knox 20 is the most highly developed and highly refined marine engine of its size offered for 1921. Up-to-the-minute in design, produced in quantity by a big manufacturer, it embodies the utmost in value and economy as well as the utmost in quality and efficiency.

As an owner you want a motor that combines power, simplicity and accessibility with economy and steady service. And you get all this when you put a Knox Twenty in your hull.

***Don't decide on any motor until you have the Knox 20 specifications and prices before you. Write us today.***

## KNOX MOTORS ASSOCIATES
### SPRINGFIELD, MASSACHUSETTS, U. S. A.

**Made in New England at Springfield, Massachusetts, by Knox Motors Company, also manufacturers of Truck, Tractor, Passenger Car Engines and industrial power sets.**



Motor Boating

# MICHIGAN MARINE MOTOR

$135.

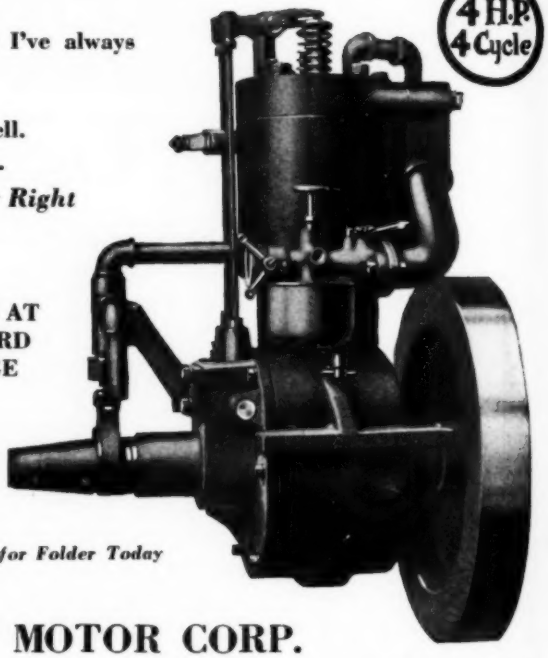
The *Boatman* says:
That's the motor I've always wanted.

The *Dealer* says:
That Motor will sell.

*WHY—*
*Because It's Right*

REPAIRS AT ANY FORD GARAGE

4 H.P. 4 Cycle



*Write for Folder Today*

**MICHIGAN MARINE MOTOR CORP.**

**7235 East Jefferson Ave.** **DETROIT, MICH.**


## Now Is the Time to Buy

(*Continued from page* 42)

By GUY W. VAUGHAN

*Vice President and General Manager, Van Blerck Motor Co.*

OUR price reductions were based on the anticipated ecessory, raw material and labor reductions that would inevitably follow, and have for sometime been delivering motors at a very small margin of profit, too small to consider permanently. A price reduction, however, has come on raw material, labor and some of the accessories. These reductions have been in some instances very material, and a saving has been effected in the manufacture of our product of about 15 per cent.

There are, however, various phases to the present situation, and while a material reduction in the finished product has been accomplished, selling expenses have increased to some extent owing to the falling off in the demand and the change from a seller's market of six months ago to a buyer's market of today. Decreased production has also added materially to the cost of the finished product, so that taking into consideration the decreased cost of raw material which is somewhat offset by the increased cost in production and selling, it is difficult to see where further reductions are possible owing to the already very small margin of profit.

Such accessory manufacturers who have not reduced their prices will find that competition is exceedingly keen, and that we are entering into an era in which intelligent purchasing, economical production and energetic sales campaigns will have considerably more to do with the net results obtained from a business than has been the case in a number of years.

By E. J. STONE

*Assistant Chief Engineer, Knox Motors Co.*

IF you will refer to the Graphic Charts, going back for possibly 50 years, you will note that any rapid increase in the general cost of living is followed by a decline which is considerably more gradual in its descent than the line showing the increase. This condition seems to have always held true, and there seems to be no special factors covering the condition at the present time which would indicate that there would be any change in the descent of prices today.

Materials have dropped somewhat, but the drop has been rather gradual. Labor reduction is even less rapid. This being the case the manufacturer who is putting through his goods in a sufficiently large quantity, must make his material contracts considerably in advance of the season and the price of materials around November would have governed his selling price for this year.

I think most manufacturers have anticipated a decline in labor and materials, and have therefore made their price at the beginning of the season with this in view. In other words, their estimated percentage of profit is considerably below their former margin. They depend on the anticipated materials decline to bring their earnings as near normal as possible. In view of this, I can see no factor of any sort which would warrant the manufacturer in reducing their selling price from that set the first of the year.

In fact, I think, that the matter can be summed up by saying that as a general run, the engine manufacturer will make less per unit on his sales of this season than ever before, and also owing to improvement of designs and construction, the customer will get more for his dollar than he has heretofore received. You, of course, appreciate that the price advance in the marine motor industry has been much less than in most any other line, therefore any decline in price can be only in line with the advance previously made.

I trust the above letter will give you some idea of our feeling on the subject. We, ourselves, certainly do not intend to make any drop whatsoever in price during the year 1921.

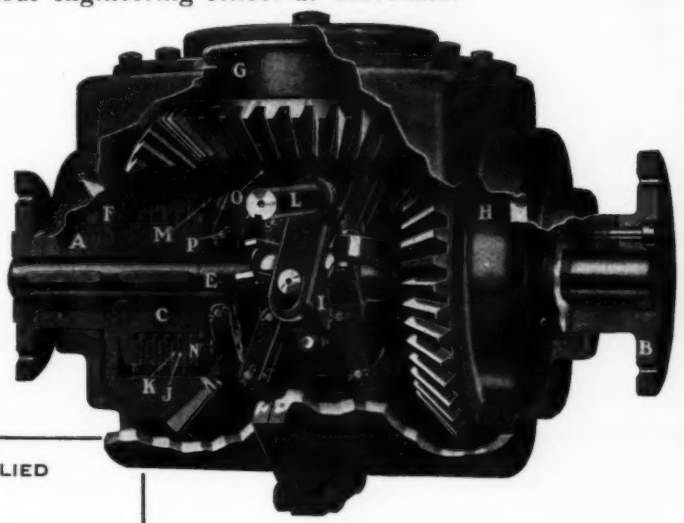
(*Continued on page* 138)

*Advertising Index will be found on page 142*

# The Gear for Heavy Service
# McKinnon Reverse Gear

IN our own commercial boat and in other boats under our direct observation, McKinnon Reverse Gears have for three years withstood severe service tests more successfully than any reverse gear we could buy. Not satisfied with service tests alone we submitted the McKinnon Gear to electric dynamometer tests at the Mechanical Laboratory of the Case School of Applied Science, the famous engineering school at Cleveland.

We believe that no other gear on the market could equal the efficiency shown by the McKinnon Gear in this laboratory test. If you have a heavy boat, or are troubled with a gear problem, you will find this report worth careful study.




**CASE SCHOOL OF APPLIED SCIENCE**
**CLEVELAND, OHIO**

DEPARTMENT OF MECHANICAL ENGINEERING

February 25th, 1921.

REPORT OF TEST—McKINNON MARINE REVERSE GEAR

The power was supplied to the clutch by means of a Sprague electric cradle dynamometer and the power delivered by the clutch was determined by means of a Prony brake. The speed of the dynamometer shaft and the clutch shaft was taken by speed counters and up to the maximum capacity of the clutch no slipping was noticed.

A table of results follows:

Reverse Gear No. 4

| Revolutions Per Minute of Clutch Shaft | Horse Power Supplied to Clutch | Horse Power Delivered by Clutch | Friction Horse Power of Clutch | Mechanical Efficiency of Clutch Per Cent |
|---|---|---|---|---|
| 100 | 20.70 | 20.5 | 0.20 | 99.2 |
| 200 | 41.48 | 41.0 | 0.48 | 98.8 |
| 300 | 62.32 | 61.5 | 0.82 | 98.6 |
| 400 | 83.25 | 82.0 | 1.25 | 98.5 |
| 500 | 104.23 | 102.5 | 1.73 | 98.3 |
| 600 | 125.29 | 123.0 | 2.29 | 98.1 |
| 700 | 146.43 | 143.5 | 2.93 | 98.0 |
| 800 | 167.73 | 164.0 | 3.73 | 97.8 |
| 900 | 189.32 | 184.5 | 4.82 | 97.5 |
| 1000 | 211.22 | 205.0 | 6.22 | 97.1 |

The friction horse power of the clutch was carefully checked with no brake on the delivery side of the clutch and proves conclusively the amount of power wasted in internal friction and that the mechanical efficiency of this clutch is remarkably good at all speeds up to 1000 r.p.m. when adjusted to carry the maximum loads given in the tables.

Friction tests were made with the clutch in reverse and without a brake, the results checking almost exactly those obtained with direct rotation. It is therefore safe to state that the clutch will transmit the same power in reverse as in direct rotation provided the adjustment is the same.

Respectfully submitted,
(Signed) F. H. Vose,
*Professor of Mechanical Engineering.*

The McKinnon Gear gives the same speed forward and reverse, and transmits full power in either direction. The mechanical efficiency is exceptionally high—the power loss exceptionally small.

This gear is built to stand hard use and abuse, with powerful engines and heavy boats, without trouble, repairs or adjustment. Operates in a bath of oil and has no small working parts to wear. Absolutely GUARANTEED FOR ONE YEAR.

**Two sizes ready for delivery:**
**No. 3 transmits 12 H.P. per 100 R.P.M.**
**No. 4 transmits 20 H.P. per 100 R.P.M.**
**Other sizes in construction**

***Write today for description and prices, giving details of your engine including R.P.M.***

## The McKinnon Iron Works Company

**ASHTABULA** *Established 1880* **OHIO**

# "STROMBOS"

**Something *New* in Marine Signals**

STROMBOS is a remarkable new high power marine signal, operated by compressed air, and designed especially for the better grade of motor boats and cruisers. For the owner who wants a signal that is at once effective and distinctive,—something new, different, better.

STROMBOS is unique in two things—in tone and in simplicity. The tone is pleasing, powerful and penetrating. It is not a whistle, a vibrator or a siren. It is the kind of a horn that commands attention and respect wherever it is heard. The boat owner who provides a STROMBOS achieves distinction for his craft in any company.

The simplicity of STROMBOS is most important. There is nothing to get out of order. No rotating parts. No adjustments. Nothing to require attention. Uses only one-tenth the volume of air required by a whistle.

We supply STROMBOS for use with your compressed air tank,—or with Rotary Air Pump driven by friction from engine flywheel,—or with Thermo-Compressor and tank for storing pressure from engine cylinder.

Cross Section of STROMBOS showing simplicity of construction

*If you want a signal to be proud of, you need the High Power STROMBOS.*

***Write today for circular "M-B."***

*BOAT BUILDERS. If you build high grade craft, you will find STROMBOS the kind of equipment you are looking for.*

***Recent installations on yachts, "Lady Grace," "Golden Days," "Nadesah," "Nahmeoka," "Dirinda," etc.***

**AMERICAN STROMBOS COMPANY, Inc.**

**MARKET and 18TH STREETS, PHILADELPHIA, PA.**


# Now Is the Time To Buy

(*Continued from page* 136)

By T. L. SMITH

*General Manager, Caille Perfection Motor Co.*

WE have always tried to maintain the quality of our motors to a set standard, but I am frank to admit we have not always done so. This was not so much due to the fact we were trying to hold down the cost as it was to inability to get the right materials. We are today looking at the engine business in a little different light than we have heretofore and have determined to take whatever saving we can make in production of motors and put it into the quality of the material and workmanship, so when we send a motor out, every man in our institution can take an oath that the motor is right from every angle.

By J. B. FARR

*Sales Manager, Kermath Mfg. Co.*

THE fact of the matter is just this, we do not anticipate that we will make a reduction before the very late part of this year for the following reason:

If we expect to make an engine for our customer this summer, we have to buy our goods now and manufacture them. We can't wait until the middle of July, just because the price of cast-iron and steel might come down a few cents at that time. In other words, we can't stop business just because prices might come down a little bit.

If the marine trade expects to get engines in 1921, they have to be manufactured without any further delay, and we might say that we are manufacturing every day just as steadily as we can. You cannot get castings in a moment, and you cannot make an engine in a moment—it is a process of a good many weeks.

The marine engine business is going to be good when the season opens; in fact, it is good right now, and when the time comes when the customers want Kermath Motors in a hurry they are going to be right on our floor ready for delivery. The world hasn't gone to the dogs, and, furthermore, it isn't going there.

There is no doubt that you will be able to save more money by waiting until next year, but we might all be dead next year, and the way we feel about it is, if a man waits until next year to save 5 or 10 per cent on the price of his engine, that is going to be strictly up to the individual.

We have got to buy on today's market. And we are not going to stop doing business simply because the price of materials might go down. There are lots of things that might happen before next summer—we might have an earthquake.

By W. C. MOREHEAD

*President, Great Lakes Boat Building Corp.*

IF I sense the facts correctly, I am sure that it is a conservative statement to say that pleasure boats can be purchased today on practically a pre-war basis, and with every assurance to the customer that there will be no further liquidation in the quotations that obtain at this time. The reason that this condition should obtain is perfectly logical, as the manufacturing costs on the most essential items entering into pleasure boat construction have been reduced within the last six or eight months to practically a 1916 level.

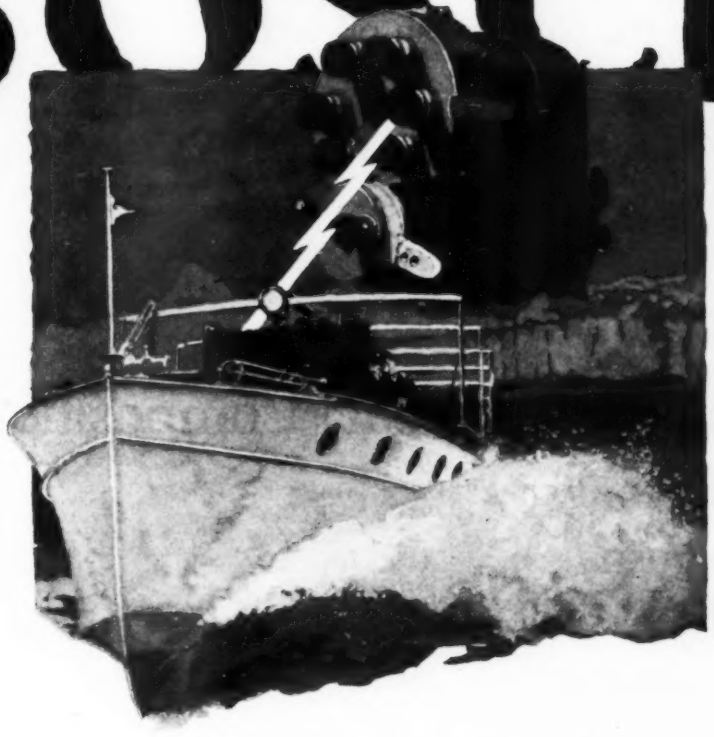
In my shop the labor alone has been liquidated to within 15 per cent of the scale obtaining in 1916. The purchasing department is now buying copper on a lower basis than at any time since 1914, which is a very important item in the way of fastenings, fittings and equipment. I find that other raw materials, especially lumber, have been greatly reduced in price.

The marine engine situation has probably been somewhat confusing to the public, as some of the manufacturers did not raise their prices during the war and, consequently, there have been no reductions in their quotations, although the fact remains that they are now practically doing business on a pre-war basis. In some instances, however, the marine engine manufacturer has effected a substantial reduction in order to keep their shops in operation so that power plants can be purchased today for not more than the prices obtaining in 1916, and at the same time the customer gets a much better piece of machinery.

The public must keep in mind the fact that not only were the prices not materially increased on marine engines during the past two or three years, but that the boat manufacturers did not inflate their quotations in the same proportion as prices in other lines of industry. As a consequence, by following this policy the industry suffers by reason of the fact that there has apparently not been the percentage of reduction in quotations as has been made in other fields of activity.

It is most natural that the manufacturers engaged in the pleasure boat industry should liquidate to a pre-war basis as soon as possible, and even to the extent of sacrificing profit, so as to keep their organizations intact during the readjustment period. The officials that I have talked to about the matter have all felt that the sooner this problem was worked out the better it would be for the business and consequently they have reduced their costs as rapidly as possible so that the combined effect of the liquidation in labor, materials, power plants and accessories has worked out in such a way as to permit of pre-war quotations.

# BOSCH



## As Sure as the Tides

Where sureness and absolute dependability are of the first importance, you will invariably find Bosch High Tension Magneto Ignition. The Bosch life-giving stream of fire will add the same stimulus, economy and worthiness to your gas engine that it has to more than three million. Bosch Magneto Ignition is conveniently available for your automobile, truck, tractor, motor boat or stationary engine. Insist upon Bosch on any automotive product you purchase — and the nearest Bosch Service Station will install it in a few hours on your present engine.

***Be Satisfied*** ***Specify Bosch***

**400 Service Stations in 400 Centers**

## American Bosch Magneto Corporation

**Main Office and Works: Springfield, Mass.**

**Branches: New York, Chicago, Detroit, San Francisco**

**AMERICA'S SUPREME IGNITION SYSTEM**

**Motor Trucks, Tractors, Airplanes, Motor Cars, Motor Boats, Motorcycles, Gas Engines**

*Trade* *Mark*

Take the old varnish off with

# E Z Varnish Remover

The film remains soft until removed.

Refinish with

## Crockett's Spar Composition

The only
varnish
which will last
a season
on a deck

and you will not have the task to do again in a long time.

Ask your dealer; he has them; if he will not supply you, we will.

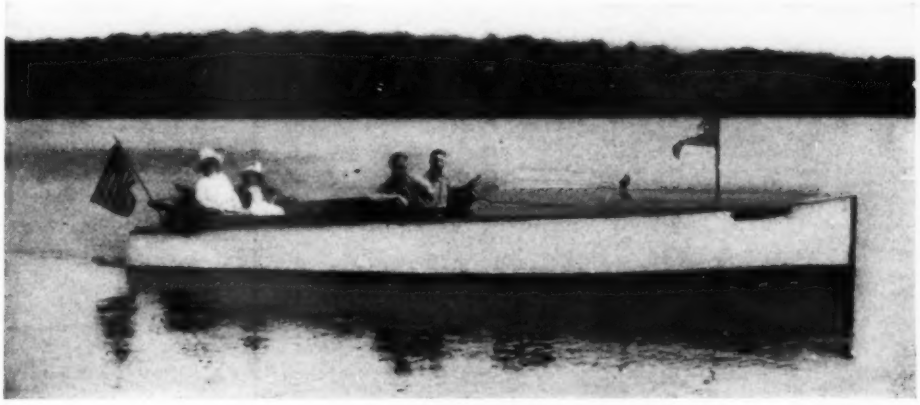
THE DAVID B. CROCKETT COMPANY
BRIDGEPORT, CONNECTICUT
THE BISSELL VARNISH COMPANY, Successor

*Send for Booklet "How to Varnish a Boat"*

*Advertising Index will be found on page 142*

# "CORRECT IN EVERY DETAIL"

**THAT'S THE OWNER'S VERDICT**



Twenty-four-Foot Junior Runabout, Design E-17

Service is what really counts in the final analysis. Mr. Strout's boat is illustrated above. Here's what he says:—

E. A. STROUT FARM AGENCY
150 Nassau Street
New York City

January 31, 1921.

FAY & BOWEN ENGINE COMPANY
Geneva, N. Y.

Gentlemen:—

You may be interested to know that my attention was first drawn to your products in 1908, when for eight weeks I watched the uniformly satisfactory performance of one of your engines on Mooselookmeguntic Lake.

During recent years I have observed several of your large engines and their owners always had a good word for them. Therefore, when I wanted a fool-proof, family boat, I ordered—sight unseen—the 24-ft. Junior runabout powered with your L-41 engine with generator, self starter, etc.

After using this boat four months, I want to thank you for having furnished me an absolutely perfect outfit, correct in every detail, which it is a pleasure to operate. The engine is practically free from vibration at all speeds and develops full power.

Yours truly,

*(Signed)* E. A. STROUT

EAS:AH

Let us know your requirements and get our literature on engines and boats.

# Fay & Bowen Engine Company

**104 Lake Street GENEVA, N. Y. U. S. A.**

**NEW YORK: 44 Third Ave., at 10th St., Sutter Bros., Representatives.**
**PHILADELPHIA: 116 Walnut St., Marine Equipment & Supply Co., Representatives.**
**BOSTON: 84 Atlantic Ave., Gray-Aldrich Co., Representatives.**

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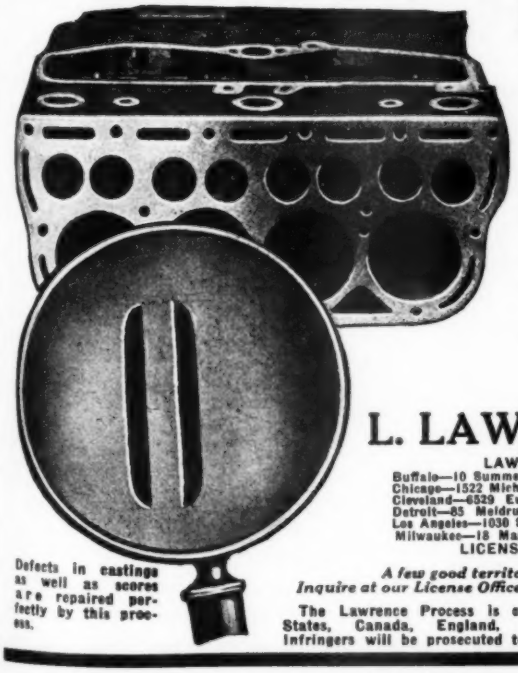
WYMAN-GORDON
GUARANTEED FORGINGS
STANDARD OF THE INDUSTRY

# GUARANTEED FORGINGS

The Backbone of the Finest Automotive Engines

WYMAN — GORDON
The CRANKSHAFT MAKERS
WORCESTER, MASS. CLEVELAND, OHIO.
CHICAGO, ILL.

# LAWRENCE PATENT PROCESS



Defects in castings as well as scores are repaired perfectly by this process.

## SCORED CYLINDERS REPAIRED PERFECTLY

SCORED cylinders can be repaired as good as new at comparatively small cost by the Lawrence Patent Process. New cylinder castings which show slight defects in the bore can be made as perfect as a flawless casting. Cracked water jackets are repaired perfectly and permanently.

Our expert workmen electrically fuse a silver nickel alloy into the defects or scores. The bore of the cylinder is not enlarged; the standard piston and rings fit the same as when new. The compression is restored and our work is *guaranteed for the life of the motor.* Positively cannot warp or harm the cylinders in any way because the cylinder is not heated.

Repairs by the Lawrence Patent Process are quick, inexpensive, uniform and absolutely permanent. Our plants give 24-hour service.

***Write us to-day for quotation on your work, stating size of cylinder and size of score or defect, or if you are in a hurry, ship your cylinders at once to our nearest service branch.***

**L. LAWRENCE & CO.,** Established 1862 **292 HALSEY ST. NEWARK, N. J.**

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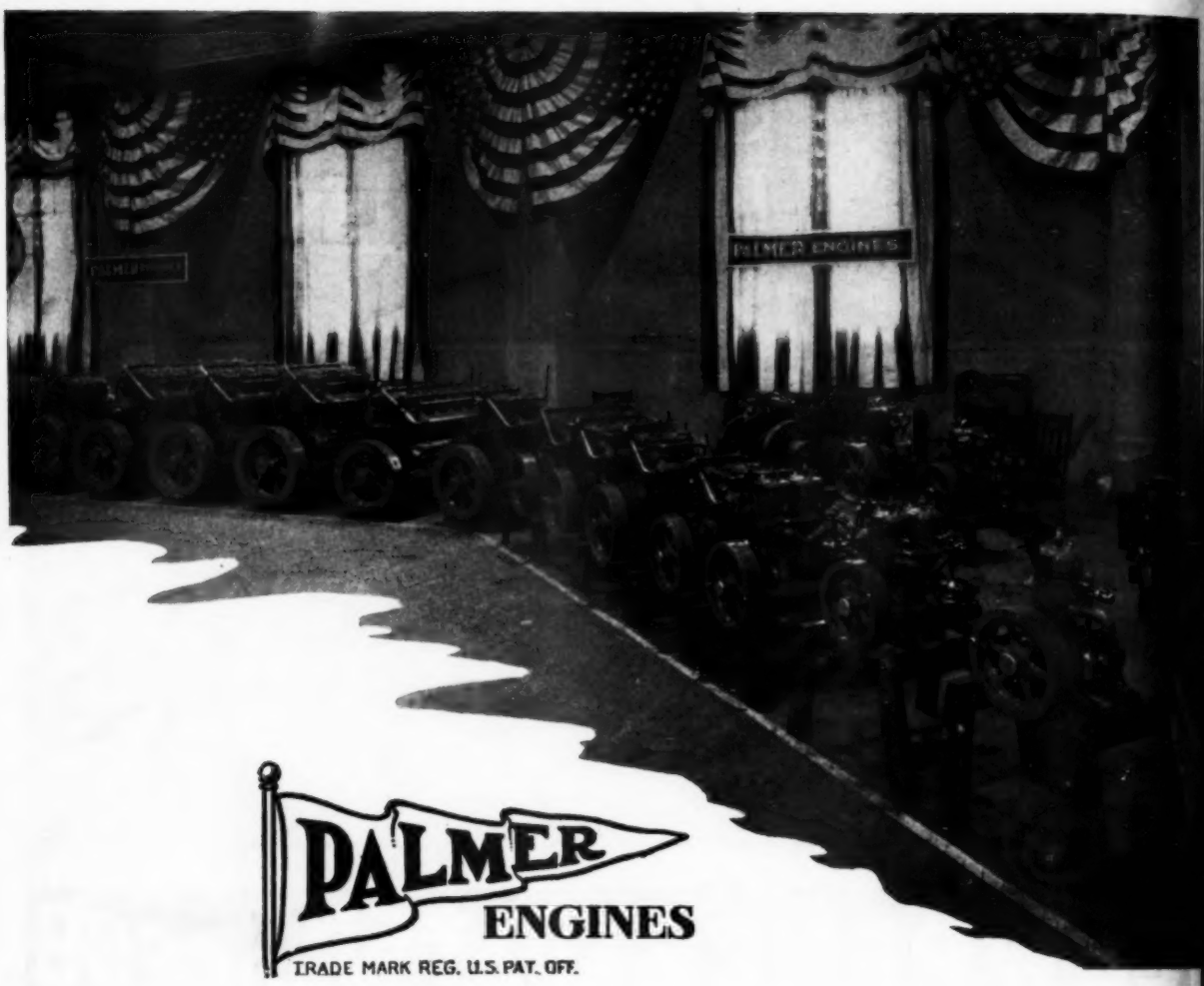


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